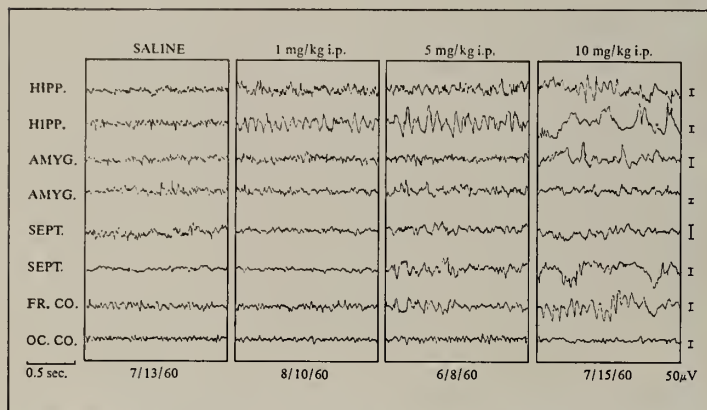


HARVARD MEDICAL ALUMNI BULLETIN



Crisis in Our Cities

demonstrated in animal studies: selective action of Librium® (chlordiazepoxide HCl) on key areas of the brain's limbic system

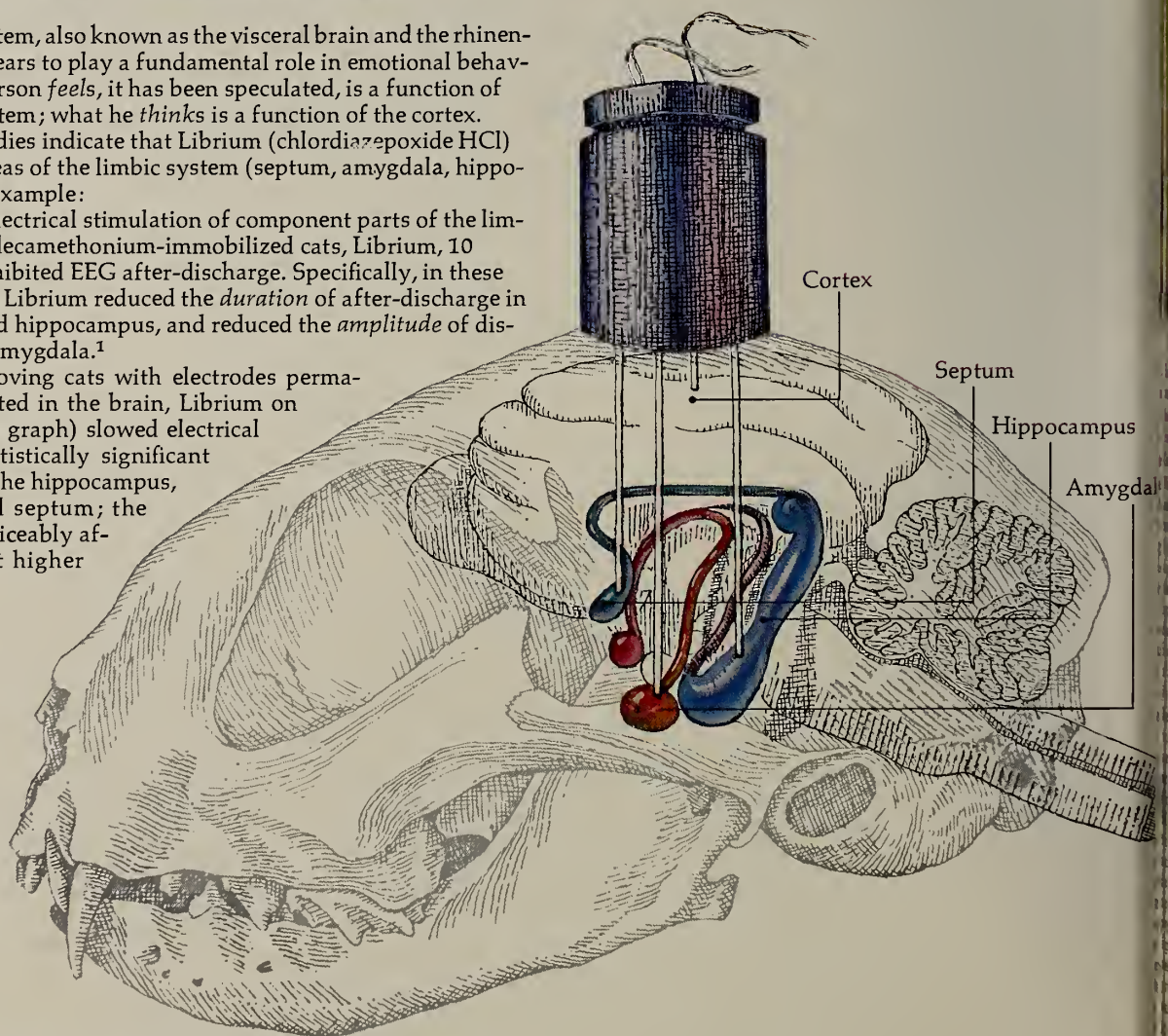


Spontaneous activity of EEG in unanesthetized cat with electrodes implanted in hippocampus, amygdala, septum, frontal cortex, and occipital cortex. Chlordiazepoxide HCl, 1 mg/kg i.p.: slowed the hippocampus and amygdala but induced no change in behavior. Chlordiazepoxide HCl, 5 mg/kg i.p.: slowed electrical activity in all leads including cortex; cat was sedated but awake. Chlordiazepoxide HCl, 10 mg/kg i.p.: caused slowing in all leads; cat was asleep. (Adapted from L. H. Sternbach, L. O. Randall, and S. R. Gustafson,²)

The limbic system, also known as the visceral brain and the rhinencephalon, appears to play a fundamental role in emotional behavior. What a person *feels*, it has been speculated, is a function of this limbic system; what he *thinks* is a function of the cortex. Bioelectric studies indicate that Librium (chlordiazepoxide HCl) acts on key areas of the limbic system (septum, amygdala, hippocampus). For example:

Following electrical stimulation of component parts of the limbic system in decamethonium-immobilized cats, Librium, 10 mg/kg i.v., inhibited EEG after-discharge. Specifically, in these animal studies Librium reduced the *duration* of after-discharge in the septum and hippocampus, and reduced the *amplitude* of discharge in the amygdala.¹

In freely moving cats with electrodes permanently implanted in the brain, Librium on low doses (see graph) slowed electrical activity at statistically significant levels only in the hippocampus, amygdala and septum; the cortex was noticeably affected only at higher doses.^{2,3}



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Precautions: In the elderly and debilitated, and in children over six, limit to smallest effective dosage (initially 10 mg or less per day) to preclude ataxia or oversedation, increasing gradually as needed and tolerated. Not recommended in children under six. Though generally not recommended, combination therapy with other psychotropics seems indicated, carefully consider individual pharmacologic effects, particularly in use of potentiating drugs such as MAO inhibitors and phenothiazines. Observe usual precautions in presence of impaired renal or hepatic function. Paradoxical reactions (e.g., excitement, stimulation and acute rage) have been reported in psychiatric patients and hyperactive aggressive children. Employ usual precautions in treatment of anxiety states with evidence of impending depression; suicidal tendencies may be present and protective measures necessary. Variable effects on blood coagulation have been reported very rarely in patients receiving the drug and oral anticoagulants; causal relationship has not been established clinically.

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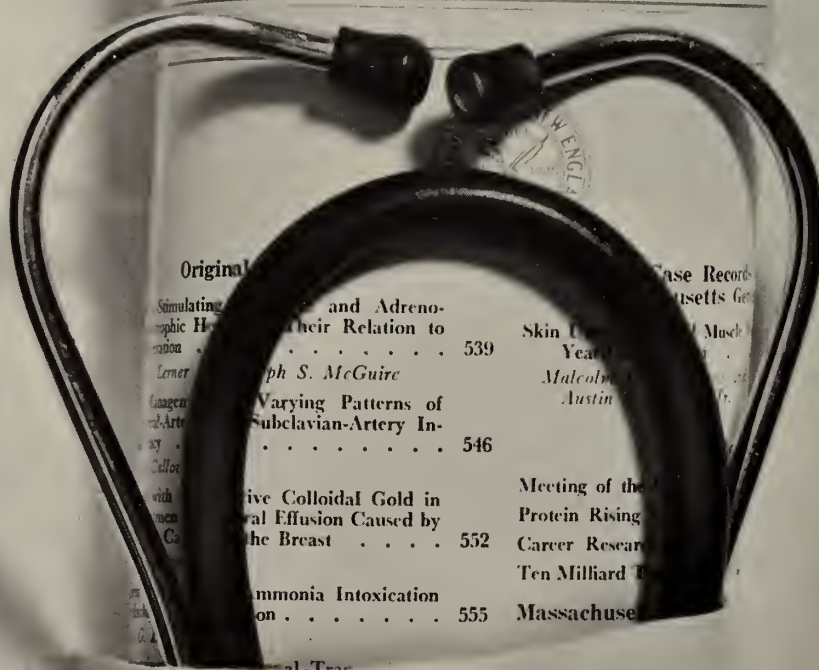


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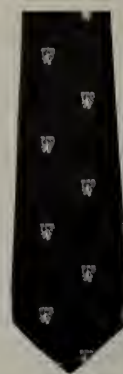
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COVER: H. Armstrong Roberts has dramatically depicted the crisis in our cities. On page 6, John W. Gardner, chairman of the Urban Coalition, delineates how the crisis can be overcome. Mr. Gardner delivered the talk, upon which this article is based, on May 22 at HMS.

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*The opinions of contributors to the Bulletin do not
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LET me begin by suggesting the direction that is being taken by the most modern thinking on the future patterns of human settlement.

Within the past 20 years the urge on the part of large numbers of people to pile into the cities has become wholly anachronistic.

For ten thousand years, people had excellent reason to crowd themselves into urban centers. The massing of people and resources in one place served useful purposes. The diversity of human interaction provided a stimulus that could not be found elsewhere. Thus from earliest days the cities were creative centers. Diverse cultural strains from the countryside met, clashed, and produced significant new combinations.

The massing of resources made it possible to do things on a scale that would not otherwise have been feasible. The economic and military advantages that accrued to the earliest urban centers were considerable.

Today, thanks to advances in communication, transportation and the arts of organization, we can provide such advantages at any point on the map that strikes our fancy. We have not yet absorbed all the implications of that fact. We are now in a position to make the word "provincial" obsolete.

It is a mistake to suppose that this would weaken our greatest cities. It would strengthen them to be nerve centers in a far-flung and varied pattern of human settlements in which vitality is distributed through all parts of the system. The great cities have certainly not been strengthened by the centripetal forces operating in recent decades.

If we recognize the new flexibility that is possible in human settlement, then we should be asking these questions: How can we best use the land space of the nation? What patterns of settlement and open space best serve our purposes? How can we preserve areas of natural beauty, revitalize rural areas, create new cities, and overhaul existing cities to serve human needs and the requirements of economic vitality?



photograph by Harold M. Lambert

THE URBAN COALITION

JOHN W. GARDNER

The best that can be said today is that we are beginning — barely beginning — to think in those terms.

One area of effort that is highly relevant — and in which we have made good beginnings — is regional economic development. I have been particularly interested in recent discussions of economic development efforts in Southern rural areas, to stem the deterioration that leads poor people to migrate to the already overburdened city. If you consider, as I was forced to consider when I was Secretary of Health, Education and Welfare, the conditions in the Mississippi Delta region that stand as obstacles to human fulfillment, you find that you cannot imagine tackling one kind of problem (e.g., health) alone — nor one city alone. What is needed is a regional approach covering health, education, employment, housing, and industrial development.

It is significant that one of the most effective barriers to the launching of such an effort is the lack of coordination of the federal departments that would have to participate in the program.

Large-scale regional economic development schemes can probably only stem from the federal government, but any city can begin tomorrow to "think regionally." Not long ago the leading citizens of a medium-sized city came to me to seek help in thinking about a long-range plan for the development of their community. To my surprise their thinking was limited to the city itself. They said it would be entirely possible to include the suburbs, but I told them they would have to go far beyond that, to the point of seeing their city as part of a pattern of settlement that included two much larger cities less than 100 miles away, and a dozen or more

smaller towns that were in fact satellites of their city. I told them that if they would study that larger pattern they would discover innumerable lines of interdependence that would have to be explored. Transportation, communication and economic interdependence are obvious topics for study; other dimensions are less immediately apparent. To what extent, for example, should the hospitals, clinics, and medical school of this medium-sized city be related to the greater medical centers 100 miles away? To what extent should this city regard its own medical personnel and facilities as a resource to the small towns 10-20 miles away? Such satellite relationships are certain to be a part of our future; we had better be thinking about them.

The problem of developing such patterns of creative interdependence is much the same in every field — health, education, industry. It is complicated by the absolute necessity of doing two seemingly contradictory things: availing ourselves of the enormous benefits that come from over-all patterns of organization; and preserving diversity and human-sized communities.

On the one hand we must go *beyond* the city to area-wide planning if we are ever to solve the problems of air and water pollution control, transportation, open space, and the like. But at the same time that we reach out to create larger systems, we must do everything possible to revive the old-fashioned neighborhood, and to create human-sized communities within the metropolitan mass.

Thus far I have been speaking of the city in the larger context of the region and the nation. Let us turn to the city itself. It's all very well to dwell on long-range plans for saner patterns of human settlement, but we have problems of shocking magnitude in our existing cities and we must meet them. I cannot review here the total range of urban problems and I shall mention only one or two central issues that concern me deeply.

I have looked at all the various

problems of the city — the snarled traffic, the polluted air and water, crime, overcrowded schools, inadequate health services, and breakdowns in public order. And I have listened attentively to the special explanations as to why each of these problems has arisen. But out of all these crises a conclusion begins to emerge that is more alarming than any one of them: our greatest cities have lost command of themselves and their future. They lie helpless as the multiple waves of crisis roll over them, like half-sunken battleships battered by heavy seas.

Why?

It's a big enough question to provide meat for a dozen speeches. I'm going to talk about the one issue that I think is paramount.

We pride ourselves on having a system in which power and initiative are widely distributed among various institutions and levels of society. We speak of the system as "pluralistic" in the sense that there is a great variety of institutions, none of which is locked into a single, all-embracing hierarchy.

We like it that way. I spend a great deal of my time urging that we preserve that pluralism.

But it has a weakness — and we had better think hard about that weakness if we are to preserve the system. The potential weakness of any pluralism is that the many more or less independent elements in the system will find it impossible to work together in achieving any common purpose. And a system that can't pursue its common purposes effectively will not long survive. It will sooner or later lose all coherence, all sense of direction, all capacity to achieve the shared goals of its members.

Pluralism in this society today is built largely around specialized functional worlds such as business, labor, the professions, the academic world and so on. Each world pursues its own functional concerns. And deep in our tradition is the notion that if everyone pursues his own business diligently, the common interest will be well served.

The only trouble is that it isn't true. Observe the cities today. Each functional group — business, labor, the church, the universities, the medical profession — does its specialized work, but neither individually nor collectively are they doing the things that will solve the city's problems. Indeed some of those problems arose precisely because no one of the special functional worlds (nor all of them together) was paying attention.

Who was thinking about the total community interest when Highway Commissions slashed their way through one after another of our great cities, chopping up natural communities, using up precious land, consulting no one as to the optimum relation between patterns of transportation and other aspects of community life?

Of course, they were just pursuing their own functional specialty, as they were brought up to do — doing their own thing. But it's a poor way to run a community.

Who was thinking about the implications for the community, or for that matter the nation, while the great migration of poor black people to the cities was taking place? No one. Studies of that migration are now taking place, studies that will tell us a great deal about its nature and implications. But this is 1969 and the massive movement of people may actually be over. Why weren't we studying it in 1964? Or 1959? Or 1954?

The interrelationship between the specialized worlds is at the heart of some of our toughest social problems. You can't think about low-income housing without thinking about whether the occupants can find work within commuting distance, and what transportation facilities exist.

The specialized institutions of our society do not find it easy, or sometimes even possible, to think about such problems. One may argue that this is as it should be, and that government is the proper institution to deal with the broader problems. But government, particularly at the local

level, has all too often become just another specialized element in the pluralism, no more inclined than any of the other elements to concern itself with larger objectives and over-arching problems. In the case of local government, one can explain the failure by noting that it has been starved and neglected by the electorate. It is harder to explain the failure of the federal government. Only those who know the federal government very well indeed know how disinclined it is to think in the largest terms about the nation's future.

Since it is fashionable these days to speak ill of the federal government, I hasten to say that such is not my intention. This huge and complex society cannot function effectively without a strong and vital federal government. If it is inefficient or inadequately responsible to human need we must redesign it. We cannot turn our backs on it.

But neither can we turn our backs on local government, and that is precisely what we have done.

As a result, most cities are monstrosities from a governmental standpoint. The typical metropolitan area is fragmented nonsensically into dozens, even hundreds of political jurisdictions. City officials are typically underpaid. The Mayor or City Manager rarely has either the authority, or money, or personnel to do an adequate job of governing. The machinery of city government is typically antiquated. City ordinances are riddled with provisions designed to favor or protect vested interests. The city officials of this nation deserve medals for the patience and stamina with which they tend the outworn machinery.

One particularly regrettable deficiency is the lack of any adequate planning capability in our great cities. Like a decerabrate frog, the city can twitch its muscles in response to specific stimuli, but it cannot think ahead.

But the most pressing problem of the cities is money. They have reached the end of their rope. Until we undertake a thorough reexami-

nation of our patterns of taxation and allocation of resources among federal, state and local levels, we shall not save our cities.



NOW let me speak plainly. The root source of all these problems — the fiscal starvation, the archaic machinery and the chaos that stems from them — is public apathy, the apathy of the people throughout the nation, and in the suburbs, and in this city, and I dare say, in this audience. People just aren't interested. They will not pay attention to local government, nor work to improve local government. And until that changes we shall slide ever deeper into the morass.

Of course, the strengthening of local government alone isn't a total solution. It's just an essential ingredient. Given our pluralism we also need some means of bringing local government into fruitful contact with all the elements of the private sector — and all the elements of the private sector in touch with each other.

This is one of the key purposes of the Urban Coalition.

After the summer riots of 1967, a group of outstanding leaders in American life came together to form the Coalition.

The members of the Steering Committee included mayors such as John Lindsay of New York and Jerome Cavanagh of Detroit, business

leaders such as Henry Ford and David Rockefeller, labor leaders such as George Meany and Walter Reuther, leaders from the black community and religious leaders.

I would emphasize the importance of the coalition principle. The Coalition is not just another organization tackling the tough urban problems of the day. It is unique. Our distinction is that we bring together segments of American life that do not normally collaborate in the solution of public problems.

Because of the need for such collaboration at the local level, the founders of the Coalition immediately began the formation of local coalitions. We now have 45 such locals. All of them are not equally strong. Some are limping. But most are exceedingly vigorous. New York, Detroit, and Minneapolis have outstanding locals. And I shouldn't mention only the big cities. We have an excellent local in Winston-Salem, North Carolina, and an excellent one in Fresno, California.

As in the case of the national, each local organization includes representatives from a variety of leadership segments in the community — the mayor, business, labor, minority groups, religion, and the universities.

The coalition principle requires that minority groups be represented in the effort to solve community problems. And such representation is itself a step toward solving the toughest problem of all — effective dialogue between minority communities and the dominant elements in the city.

Such communication is difficult. It requires patience and imagination and stamina on the part of everyone involved. The encouraging thing I can tell you is that such communication is possible. We have now proven that over and over again.

But I must emphasize one point. When a crisis strikes it is too late to begin the long arduous process of building effective channels of communication. If there is to be fruitful collaboration, it must begin and be

tested in a non-crisis atmosphere. Then when trouble strikes, if it does, men who have learned to work together and trust one another can go into action together.

The national organization leaves it entirely to the locals to determine priorities. The local coalitions make their own decisions as to what problems they want to tackle.

But the problems the locals turn to are fairly predictable. They turn to the things that worry them the most — unemployment, housing, education, race conflict, black entrepreneurship, and police-community relations.

I will not burden you with a recital of the achievements of the locals, but they have gotten into an extraordinary variety of activities. They have formed venture capital corporations to assist black businesses, launched significant housing ventures, supported important new educational activities such as the Street Academies, set up youth councils, tackled local problems of race conflict and so on.

Why has the Urban Coalition grown so rapidly? How is it able to enlist the time and energy of the most able and gifted people in the country? How has it been able to establish itself so quickly as a significant landmark in our national life?

To me, the answer is very simple. It serves a necessary function, and it is unique in serving that function. Neither in our cities nor in the nation as a whole is there any other instrumentality that undertakes to bind together all the various segments of national leadership. It provides a grass-roots network in which all segments of our national life can collaborate in shaping the future of their communities. It links the public and private sectors. It links national and local levels of action.

It involves two basic principles. One of them is the principle of coalition. Most of our cities are very badly fragmented. And the fragmentation makes it almost impossible for the city to tackle any of its problems effectively.

We can correct that fragmenta-



photograph by Ewing Galloway

tion; we can correct it through the process of coalition.

The second principle is grass-roots leadership. We believe that people must care about their own communities. They cannot imagine that their communities will remain healthy if they turn their backs on elementary civic duties. The tradition of local leadership is badly decayed in this country, and as I pointed out earlier, a great many of our ablest citizens have paid little or no attention to the fate of the city in which they lived or worked. We can change all that. We can revive the tradition of civic responsibility.

And it isn't enough to utter fine words about civic responsibility. We have to get down to the tough practical details of questions such as employment, housing, education, and black entrepreneurship. That's what local coalitions are doing all over the country.

I don't intend to tell you that the problems we face in the cities today are deadly serious. They are immensely complex. They are deeply rooted. They will not be corrected in a brief period of time. Many Americans are now worried about those problems. But I don't think they are as worried as those of us who spend

our days working on the urban crisis. We are shaken by what we see. And we do not want the American people to learn in sorrow and conflict what they might foresee and prevent through timely action.

We have heroic tasks ahead of us. Unfortunately, as we face those tasks it sometimes seems as though every element in American life is at war with every other element. Just when we should be pulling together everyone seems at odds with everyone else.

Against that background I ask you to remember that there is one group which still believes that this must be "one nation, indivisible," one group that has taken on the thankless task — the task no one else wanted to take on — of creating channels of communication among all segments of American life, one group that is pulling together — the Urban Coalition.

We came together in a moment of national crisis. We have stuck together with good spirit and good will over a 24-month period that has proven to be one of the roughest in America's history. And we are getting stronger every day.

But the tasks ahead are tough and we need your support.

DRUGS in OUR SOCIETY

DANA L. FARNSWORTH '33

BELIEF in miracles may be the privilege of the primitive, the ignorant, and the exceedingly devout, but it is certainly not limited to these groups. It pervades the thinking of a vast number of Americans, and indeed of all Western society, especially as it involves confidence that drugs can solve all our problems. Thanks to modern science and technology, aided by the enthusiastic promotion of pharmaceutical houses and wishful thinking of many physicians, our people have been led to believe that for every pain there is an antidote, for every unhappiness a tranquilizer, for every mood a reversing agent, and for every disease a specific cure. It is not uncommon in a physician's practice for a patient to bring to the office a box full of the drugs currently being taken on prescription from various physicians. A person may boast that he keeps himself going by using a sedative to get to sleep, a stimulant to get started in the morning (in addition to the caffeine in his coffee), a tranquilizer to ease his anxiety during the day, cocktails before dinner to aid in relaxation, all interspersed with numerous cigarettes.

College students, especially sons and daughters of physicians, are often provided with a variety of medication as they leave home, and these same students trade with one another as they discover new potentials in each other's drugs. Most family bathroom cabinets contain an assortment of drugs of varying vintage, tempting the various members of the family to try one or more of them for whatever discomfort they may develop. It is no wonder that we have been called a medicated society, a nation of pill-takers. Physicians must assume much of the re-

sponsibility for having oversold an idea that is obviously worthwhile when applied appropriately. Drugs are indeed one of the great blessings of modern science and technology. When misused or abused, they can be a source of misery and unhappiness as well as a factor in preventing such a user from making full use of his capabilities.

Granted that the medical use of drugs is a great boon to humanity, it must be said at the same time that their use to achieve forgetfulness, escape, or new and creative experiences has much less acceptance. Where there are differences of opinion regarding the use of drugs for escape or to change perception, those differences are likely to be expressed with strong feelings, ranging from the fanatic-like dedication of the punitive-minded enforcer of the drug laws to the near-panic of parents who learn their child has been caught smoking marihuana.

The whole-hearted belief in the efficacy of drugs to solve every ill of mankind — psychological as well as physical — has been passed on to the younger generation. Young people, despite their rebellion against their parents' modes and values, have unwittingly adopted this very basic belief that drugs can and should be used to produce any desired alteration in body or mind. The problem does not lie just in drug use; it lies in the fact that the drugs used by young people, the effects produced, and the belief that self-prescription is safe and legitimate, cannot be and are not accepted by responsible adults.

The misuse and abuse of drugs is almost as old as mankind. In this country, in the past it usually involved the opium derivatives (narcotics). The "drug problem" concerned those who used drugs to re-

photograph by H. Armstrong Roberts



lieve suffering from pain, unhappiness, and low self-esteem, generally members of the lower socioeconomic classes. (But it might also be well to remember that in the heyday of patent medicines, many of which had a high opium content, there was a substantial percentage of drug dependency among many of the upper classes as well.) Now the drug problem more likely concerns a young person from the middle or upper classes who is seeking new insight, new experiences and sensations, or using drugs to express his disapproval of certain aspects of society. Newer drugs which are not, (pharmacologically,) narcotics, the hallucinogens and the amphetamines, are the most frequently used. In many instances drug usage has become a weapon in the cold war between the youth and the adults, between those who wish drastic changes in society and those who desire to preserve older values.

This new form of drug use raises some of the most fundamental and compelling issues connected with human existence — varieties and degrees of freedom, creativity, the rights of society and the rights of the individual. The extensive and serious consideration now being given indicates that all sides of the question must be considered. But it is easy to see from the voluminous literature that drug use is almost always an emotionally charged subject on which few observers can be non-partisan. Many of the attitudes and opinions are not based on fact or empirical evidence; at this point they cannot be, because too little is known about drug use.

One reason for this is that drug use is not a monolithic phenomenon; there is no "typical user." The standard techniques of drawing up a profile of the drug user from data concerning economic status, individual psychodynamics, motivation, and frequency of use do not readily apply. And individual responses to drugs show a great range of variation, even variation within one person from one time to another. Probably the greatest obstacle to study-

ing drug use is that such use is so intertwined with "meanings," with emotional and intellectual acting-out, and those who study the drug-users are as inclined to such emotional involvement as are their subjects. This does not mean that we should not approach the problem seriously; it does mean that we must know what the difficulties are and be able to see the ramifications in ourselves as well as in others.

When confirmed drug users talk about their experiences, they often employ an obvious tone of self-righteousness. Some of this springs from their feelings of victimization by police, school officials, parents, "the establishment"; it also results from their belief that they have found the one path to salvation. Despite a professed belief in everyone's right to "do his own thing," drug enthusiasts often tend to proselytize with all the conviction, and the intolerance, of certain religious groups. Their references to revelation and to a feeling of union with the universe or the Divine reinforce the parallel. Some persons, it is true, do have intense religious experiences during drug episodes. But their subsequent assumption of the mantle of the prophet, the accompanying denigration of other life styles and experiential forms, serve only to confuse the issues, arouse antagonism, and raise suspicion about the real value of their experience.

All this is not new; drug use is widespread in some cultures as a form of pleasure and as an integral part of religious worship. But we live in a society which, although believing deeply in drugs, has accepted them for one specific purpose (the relief of negative somatic states) and through one specific agency (the medical profession). All other drug use conjured up a picture of a poor, uneducated, urban slum dweller, probably involved in criminal activity and probably addicted to heroin. He was a social outcast, a problem only to himself, law enforcement officers, an occasional social worker, and perhaps some remnants of family. We were dimly aware of the situ-

ation, perhaps sympathetic, but few of us were directly affected. And now we are. The drug problem now concerns the well fed, well dressed, intelligent, concerned, students and young adults of the middle and upper classes — our neighbor's children, and ours.

FROM what the more perceptive and articulate of the new drug users say, it seems clear that drugs are an intrinsic part of their effort to create a more meaningful and satisfying life style than the Great American Way which they have repudiated. There are many factors involved, and it is great oversimplification to label their drugtaking as being altogether rebellion, a quest for beauty or ultimate reality, a moral renaissance, or a cop-out. Those of us who are opposed to unrestricted, non-medical drug use must see that more is involved than such neat and tidy pigeonholes, and try to understand what it is.

Drugs hold certain promises, some of which come true as advertised, some of which are fraudulent, and some of which are realized eventually but not necessarily through the medium of the drug. The fundamental promise is that *things will be changed*, and this is very important to many young people. They feel the pain of what is wrong with the world perhaps more keenly than we did, and they feel also the "negative pain" of something missing, promises unfulfilled, another world not quite within their grasp. They believe in a mode of living that heightens aesthetic response, subjectivity, introspection, self-knowledge and understanding of others, non-verbal and non-rational experience, pleasure, creativity. Not all drug users are utopians or sincere idealists; some are, but very often they too succumb to the temptation of present gratification rather than long-term gains. What they are revolting against is a value system that encourages work for its own sake, competition, exploitation, absolutism, postponement of grati-

fication — those things that inevitably produce in a great many people the pressures and tensions that are labelled “up tight” and for which we take our own drugs, tranquilizers, barbiturates, and alcohol.

The particular drug in favor varies from time to time and in different localities. LSD probably reached its high point of usage in the middle sixties but began losing favor as the fear of chromosomal damage became widespread. There are some indications from clinical experience that it may have become more popular again in the past year or two. The amphetamines continue to be popular, particularly among the more deviant groups in which individual psychopathology is common. Cannabis appears to be used with increasing frequency by each new class in high school or college, usually in the form of marihuana but now increasingly in stronger forms such as hashish. Recent news dispatches suggest what is already known in many communities, that the use of marihuana and the custom of inhaling intoxicating fumes of glue and related compounds are spreading to grade-school children.

Endless arguments have been raised over how far a society may legislate the use of intoxicants by its members. Much depends on how far a particular drug can endanger society, and what other of society's interests are involved. We have passed legislation against the unsupervised use of opium derivatives, barbiturates, and amphetamines, because they have the possibility of destroying the health of many of our young people, but we permit their proper medical use. We have forbidden heroin altogether, as having no redeeming qualities and an absolute potential for harm. We have reevaluated the toxic agents in glues and solvents, and, weighing commercial interests against the dangers, have introduced some controls. We would perhaps pass stricter legislation concerning the use of tobacco if the economy of several states were not totally dependent upon the tobacco industry.

When the first laws against narcotics, designed to control the increasing use of heroin and cocaine, were passed, marihuana was included with them. This was a mistake. Marihuana is not properly a narcotic, and equating its dangers — and the penalties against it — with those relating to heroin is quite obviously fallacious. But because it is *less* dangerous by no means implies it is *not* dangerous. The question of the drug's real effects, both immediate and long-term, and the “rights” of everyone involved have become so tangled that we must, as men of reason, now try to unravel them.

In a recent symposium on psychedelic drugs, several investigators reported observations on marihuana that reflect on its capacity for harm. Of 21 users of LSD who were intensively studied, all had begun drug usage with marihuana.¹ In another study designed to determine the incidence of adverse reactions to LSD (in which at least 2,389 such reactions were reported) there were also 1,887 adverse reactions to marihuana reported.² McGlothlin and West stated that regular use of marihuana contributes to apathy, loss of effectiveness, and inability to carry out long-range plans. Such users had low capacity to endure frustration, poor concentration, impaired verbal facility, and a strong tendency to regressive, child-like, magical thinking. They reported greater subjective creativity but less objective productivity. They appeared to be totally involved with the present at the expense of future goals.³ Keebler, Reiher, and Liptzin reported two cases of adverse marihuana reactions in which the subjects had recurrence of the drug effects from 8 to 21 days after the drug had been metabolized. Two other persons had recurrences one to two days later of the sensations they had experienced while taking marihuana.⁴

Because persons both within and outside the medical profession have been so uncertain about the harmfulness of marihuana, the Committee on Problems of Drug Dependence of the National Research

Council (National Academy of Science) and the Committee on Alcoholism and Drug Dependence of the American Medical Association Council on Mental Health issued a joint statement on this point in 1968. This was based on an appraisal of all existing information by the committee members, all of whom had had wide experience in working with the drug problem. Five main points were stressed:

1. Cannabis is a dangerous drug and is a public health concern. Practically all societies in which it has been extensively used have found it necessary to impose legal and social sanctions on users and distributors. Although not addictive, it is a powerful psychoactive agent, and where chronic heavy use occurs it often has a marked effect in reducing the social productivity of the user.

2. Legalization of marihuana would probably create a serious abuse problem in the United States. Currently used hemp products are of low potency, but if controls were eliminated more potent (and dangerous) preparations would probably dominate the legal market.

3. Penalties for violations of marihuana laws are often harsh and unrealistic. They should be altered in such a way as to put more emphasis on apprehending the distributors of marihuana and on dealing in a flexible manner with the users. At present the laws are too strict and unreasonable to be enforced, and hence tend to evoke disrespect for law.

4. Additional research on marihuana should be encouraged, especially since the main active hallucinogenic principle of cannabis has been identified and synthesized. Knowledge presently available warrants efforts to reduce the use of the drug, but more precise information is urgently needed to resolve more of the points still at dispute.

5. Educational programs regarding marihuana should be directed at schools, communications media, physicians, and other health workers, and to all citizens. Accurate knowledge of its ill effects will in the long run be the most effective of all deterrents.⁵

The oft-repeated statements that marihuana leads to crimes of violence have not been widely substantiated. Neither is it logical to insist

that the use of marihuana leads to the use of heroin. That there is a connection, however slight, is evident from experience in the Harvard University Health Services. Eight students have been treated who did progress from marihuana, through a variety of other drugs, to heroin addiction. Rather than assuming marihuana to be the significant factor in the escalation, it was considered more likely that introduction into the drug sub-culture, with its emphasis on drug experimentation, is the most influential factor. Yet it must be admitted that a person who does not start with one of the milder drugs is not likely to become involved with the stronger ones.⁶

Drug usage among graduate students appears to be increasing each year as new students, who have been accustomed to a less conservative attitude toward drugs, enter their ranks. The wisdom of using drugs comes under close scrutiny when medical students are the ones involved. There is probably little support among medical students for the use of amphetamines, LSD, and the opiates to encourage the development of creativity and insight into one's own nature and relations with others. Those who directly or indirectly encourage the use of cannabis are more numerous. The burden of proof that cannabis is harmless lies on the proponents of that thesis; and it appears to this observer that the case for the free use of marihuana and other cannabis products is weakening as clinical evidence accumulates. Since the evidence seems to be that cannabis is harmful, especially in its more concentrated forms, it would seem to be sound social policy to discourage its use by all reasonable methods until or unless future research proves that it has no deleterious effects.

Most persons who seek assistance in overcoming their drug dependency problems have a series of concerns affecting numerous aspects of their lives. Among students the most common problems include unsatisfying interpersonal relations, either with parents or friends. Relations

with parents frequently include varying mixtures of frustration or rebellion. There may be crises in career choices, doubts about sexuality, preoccupation with feelings and emotional conflicts with no sense of relevance between their problems and their ultimate goals. Simultaneously stimulated and depressed by their uncritical desire for change, they turn to drugs as the omnipotent source of relief from tension, added insight and creativity, and (they hope) the miracle that will change the world if they acquire enough converts. For some, such drug ex-

perimentation results only in unpleasant reactions, guilt feelings, vague fears, or regrets. Others withdraw from their previous activities, believing that they have indeed found their ideal mode of being, and rationalize that their new, but ineffective state, is bringing them more happiness than the old. When and if their parents or other authorities find out that they have been taking drugs, the tendency is to blame all the users' problems on the drugs and thus postpone a sound solution to the problems which troubled them in the first place.

photograph by Harold M. Lambert



THE treatment of drug users depends mainly on the attitude of the individuals concerned as to whether they view such use as an asset or a liability. Those who find pleasure and value in drug use do not think of themselves as having any problem, and will resent the inference that they need help. Those who have become disturbed about their drug dependence, and who seek treatment, should be helped to understand and to deal constructively with the emotional conflicts that underlie improper use.

Treatment of these underlying conflicts is complicated by the previously mentioned messianic fervor of many drug proponents. In their crusade they are often convinced of their beliefs to the point of being unable to see any views but their own. A few themes that persistently recur are:

Marihuana is less dangerous than alcohol. Aside from its irrelevance — the use of one dangerous drug does not justify the use of another — there is no way to answer this question at present. Those who try to make such comparisons often violate the rules of proper scientific inquiry by comparing the effects of low dosages and intermittent intake of marihuana with high dosages and prolonged ingestion of alcohol.

Society has no right to stop us doing what we want to do as long as we do not hurt others. This is a question of values, about which no absolute statement can be made. Many persons today believe that more than ever society needs the talents of every one of its members, and has the right to protect itself from the loss of productivity that is often the final result of drug use.

We should have the right to choose any experience we want; and what is so bad about having a psychosis? It is understandable that young people want to try anything new and feel completely free to do so; but they rarely see the extent to which tragedy may occur. The casual attitude that says "Oh, a psy-

chotic episode isn't so bad, they can cure it, it's just part of the risk that makes the trip exciting" shows gross ignorance of the effects and the nature of severe mental illness.

Alcohol and tobacco, both harmful, are permitted by society; why not permit marihuana? It's certainly no more harmful than they are. Besides the principle that the use of one harmful drug does not justify the introduction of another, it is the type of harm that is involved here, and the form it takes. Alcoholic intoxication produces clearly recognizable symptoms, and those around the alcoholic can take steps to protect themselves and him. Cigarettes may be harmful to the user's body but have little effect on the mind; and it is the insidious loss of skill and productivity that is dangerous in marihuana dependence.

Adults, especially physicians, are biased because they see only those who have had bad experiences with drugs, and so they refuse to admit there can be good effects. If a physician's mind acted in this way, he would demonstrate singularly little compassion or perception or ability to interpret facts. His training teaches him to be objective and to keep his mind clear so that he can evaluate a problem more clearly than those whose perceptive capacities have been altered.

Nobody has the right to express strong opinions about the hallucinogens until he has personal knowledge of their effects by taking them himself. If this were true, only a man who has personally experienced all sorts of accidents could develop safety programs; only a doctor who has himself suffered from a disease could cure it. This theory demonstrates no understanding of the human mind's ability to interpret its observations and acquire knowledge by extrapolation, and its egocentricity would expose many people to needless risks and quite possible tragedy.

Dramatic over-reacting to drug usage, as has been amply demonstrated by the news media, only adds to the attractiveness of experimenta-

tion, social rebellion, and blind acceptance of drugs as the universal antidote to the world's ills. We must turn our attention more to the individual in the management of situations where drug use is concerned, and find out why this particular person — not his friends or his siblings but himself — has formulated his belief in drugs. Instead of emphasizing the reasons for *not* using drugs, we might very well turn attention to reasons *for* using them. When young people learn that drugs have no advantages not attainable by other kinds of activity, and when we can lead them to find acceptable alternatives, the peculiar attractiveness of drugs will disappear. Accurate information presented honestly and with a true attempt at understanding and communication is the most effective of all forms of treatment.

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The Haight-Ashbury Clinic

DRUG ABUSE IN ADOLESCENTS

PAUL N. SEWARD '68

ON Thursday, March 28, 1968, two young men came to the Haight-Ashbury Medical Clinic seeking help for sudden and pronounced mental disturbances. One of the youths was virtually incoherent, but the other reported that some indefinite time before they had each been given a small white tablet by a friend who told them that it would give them a "very heavy trip." Shortly after taking the tablets they began experiencing to an unusually severe degree, the physical and psychological phenomena which they associated with the ingestion of LSD.

The first of the youths, J.B., was quiet, apparently rational, and at first glance not obviously different from anyone else in the waiting room. He was oriented and responsive to questions, and cooperated actively in his own therapy. On closer examination, however, some unusual features appeared. He was notably lethargic and tended to avoid complicated acts. If requested to do so, he would stand, sit, and walk by himself, and he even admitted to having driven a car to the clinic

without obvious difficulty; however, if left to himself he would be satisfied with very little in the way of conversation or activity. His associations were loose and betrayed both a paranoid and metaphysical orientation, responding to such concrete questions as "Where did you get the pills?" with (in a serious tone) "The Devil may have given them to me," or responding to his companion's question, "Am I alive," with, "Death is there, — if you want it." He responded best, and replied in a similar vein, to highly vague and unstructured questions and statements, the interpretation of which was far more dependent upon the mood of the conversation and the associations of the listener than the factual nature of the statement itself. Thus he responded to the question, "Where is your head?" with "Mostly it's with good things, but this is very heavy and there are dangers around the outside." He responded worst to concrete questions such as "What time of day did you take the pill?" (He did not know and his companion didn't understand the question.) Finally,

on very scanty physical exam, his blood pressure was 125/75, his heart rate was approximately 90, his pupils were dilated widely, and his mouth was dry. A tattoo on his right shoulder bearing the inscription, "Born to Raise Hell," was the only other abnormality noted.

The second youth was obviously severely deranged. He was agitated, muttering to himself, and engaging in strange, dissociated acts of behavior over which he seemed to have little or no control, such as pounding his fists, grinding his teeth, or shaking his arms or legs. He was disoriented as to time and place and was unable to retain new information even of such an elemental nature as what year it was. This inability, however, seemed not merely to be a lack of memory, but a more basic difficulty in understanding the concepts involved. His affect was almost continually that of striking anxiety but was quite labile, and occasionally with no obvious cause he would suddenly smile and say some phrase like, "Wow, this is out of sight." The content of his conversation was strikingly bizarre; "Am I

dying?" "Is this happening to the whole world?" as well as frequent cries for help. His concerns were notably paranoid; he spat out a bite of sandwich because it was "poisoned," he imagined that people in the hall were talking about him or trying to kill him. Finally he was very concerned whether any action he undertook, even to stand up or sit down, was "right" or "wrong," and whether he would die if he performed it.

Most unusual was the repetitive nature of his behavior, of which he was only partially aware. Throughout the four or five hours he remained at the clinic, he was recurrently tormented by what in the Haight-Ashbury subculture is known as a "Flash"; that is, a set of ideas, connotations, apprehensions, beliefs and perceptions that would suddenly occur in his mind in a presumably complete and complexly interrelated form. His particular flash was somehow involved with a feeling of guilt and a threat of punishment for misbehavior. He would verbalize it with the phrase, ". . . San Francisco; don't play in the street with J.B.," and whenever it occurred, at intervals of ten or fifteen minutes, it would cause him considerable anxiety requiring a great deal of reassurance. His physical exam was noteworthy in its resemblance to acute atropine toxicity: his blood pressure was 125/85, with a pulse rate over 100; his face was flushed and dry, his pupils were markedly dilated, and his mouth was dry. Finally, in addition to these physical findings, he had an almost continual urge to void and a corresponding difficulty in initiating urination.

At their request, and upon the judgment of the examiner, both patients were treated with 25mg of chlorpromazine IM; neither of them responded in any way. At that point the possibility that STP was the cause of the intoxication was considered and later confirmed by the first patient who had had one previous experience with the compound. At this time the two were separated at

their request to prevent them from antagonizing one another, and the first observed for several hours and then sent home. The second patient, after failing to respond to reassurance and the supportive environment provided by the clinic, was given 75 mg of chlordiazapotide IM; to this he responded with a marked elevation of mood and some decrease in agitation. No return of rational behavior occurred and after another hour or two he too was discharged in the custody of his friends. It is worthy of note that on twenty-four hour followup, both patients were still markedly under the influence of the drug.

The above two cases illustrate many features of what has become a rapidly growing and severe public health problem in the United States today — the abuse of drugs by adolescents. Not that the use and abuse of drugs is new; America has long been and will probably continue to be a nation of pill takers. We smoke cigarettes, take pills to stop smoking cigarettes, and then more pills to make us lose the weight we gained when we stopped smoking. We wake up in the morning with aspirins and stimulants to offset the hangover of the alcohol and barbiturates we went to sleep with the night before. According to the mass media surrounding us, we are made elegant with our alcohol and sexy with our cigarettes, and we gain relaxation, freedom from anxiety, and promotions just from taking that little pill. What is unusual about the present situation is that for the first time the children of today not merely emulate what they see in their society, but, as is the custom of adolescents, rebel against it. However, in rebelling, in seeking thus to solve all the traditional and unique problems of modern young people, they have turned away from their parents' drugs to new drugs of their own. In so doing they have encountered two dangers: first they have incurred the righteous wrath of their forefathers, delighted to find their children guilty of a sin which they themselves have not yet committed, and perhaps

angry at their offspring for having so discourteously preceded them; and secondly, they have found in the drugs themselves, new difficulties, new dangers, and new disease. The drug involved in the above episode was STP, an amphetamine derivative related to mescaline which is thus far the most powerful and long acting of the hallucinogenic drugs, but features of the incident are common to them all.

First and most striking is the fact that both of these youths from similar backgrounds, and at a similar time of life took essentially the same drug at the same time and in the same way; nonetheless their reactions were quite different. While no one is astonished to observe the same phenomenon at a cocktail party, there is a common tendency to speak of the "effects" of the various hallucinogens and stimulants as if they had only one. It is quite possible of course that pharmacologically each does indeed have only one set of effects, just as lighting a fire beneath a recalcitrant mule merely warms the mule; however, any farmer who has ever tried it can tell you that the mule, like the drug user, may react in a number of interesting ways to the identical stimulus and the wise physician had better be prepared for them all.

Second, a number of diagnostic and therapeutic maneuvers have been mentioned and implied; the use of the supportive environment, the use of tranquilizers, and something of what can be expected from each of these. This will be dealt with in more detail under the individual drugs themselves.

Third, and most significantly to you as parents, is who the patients were. Both were typical residents of the Haight-Ashbury drug-using community; they were young, white, adequately educated and well spoken. They and their compatriots are not members of underprivileged minorities, seeking in drugs an escape from the miseries of social deprivation; they are members in good standing of white middle class America, children of a Michigan

suburb and New York's upper west side respectively. They are your children's classmates; they are your children's friends.

My discussion will be limited to three classes of drugs; marihuana, LSD and the psychedelics, and the intravenous amphetamines. This does not imply that these are the only drugs used; however, they are, in the adolescent age groups, the most important, and the medical community has had less experience with them than with the barbiturates, tobacco, or alcohol. With each, I will try to discuss what little is known about their epidemiology, something about their pharmacology, the therapeutic use of the drug if any, the abuse potential of the drug, diagnosis and treatment of drug-related problems, and finally the social and legal implication of their use.

MARIHUANA

Cecil-Loeb's textbook of medicine describes the typical marihuana user in New York City as "an idle male, aged twenty to thirty years. He has a history of maladjustment and frustration and seeks distraction, escape and conviviality by smoking the drug. The confirmed user smokes six to ten marihuana cigarettes a day. He is often sexually maladjusted (homosexual), feels inadequate and uses the drug to boost his self esteem." This article takes its material from the justly respected *LaGuardia* report, published in 1944. On March 6, 1968, however, the student newspaper of the University of California at Riverside published the results of a survey of four hundred and sixty students of the University, selected in a random fashion from the public directory with a 66% return. Of these, 35% reported using marihuana at least once and 19% reported using it more than once a month. Similar surveys run at UCSB and UCLA obtained results of 38% and 33% respectively. Moreover in the Riverside survey, 39% of those under 21 reported using marihuana while in the age group over 26, only 16% re-

ported use. Again, in June of 1967, the Juvenile Justice Commission of San Mateo County, California, acting at the request of the court, conducted a survey of the drug habits of an entire high school population in suburban San Mateo, including the complete student body of 1693 students. The results of their survey showed an overall incidence of marihuana use among the male students as 18.5%, and among females as 8.6%. However, among senior men the incidence was as high as 25.4%.

Another kind of information comes from two retrospective studies of a rather preselected population, — namely the drug users themselves. The first is an analysis of the 157 juveniles referred to the court of San Mateo for offences involving illegal use of drugs in 1967. These children were compared for such indices as school behavior, academic record, intelligence, family structure, and socio-economic background. The interesting result of the study was that although arrest for drug use embraced all classes of the categories mentioned, the drug referral cases scored significantly higher on all of them, although the correlation between intelligence and academic achievement was not good.

These data are borne out by another study of which the first stage has been completed: "Drug Abuse in the Haight-Ashbury Subculture." This study, performed at the Haight-Ashbury Free Medical Clinic, surveyed the drug habits of five hundred members of the Haight-Ashbury "Hippie" community, selected from patients at the clinic, people on the street, and habitués of various cafes in the community. The males included in the survey turned out to have an astonishing 94.5% incidence of marihuana use, an 87.8% incidence of LSD use, 44.1% for oral amphetamines, 26.5% for IV amphetamines, 53.6% for barbiturate use, both oral and IV, and a 24.8% incidence of experience with heroin. The significance of this group is of course not

their degree of drug use, for they were in every sense preselected for that; the feature of interest is the background of the users themselves.

The average age of the group was 21 years, with a range of 15 to 34. However, around the age of 21 there was a relatively even distribution from approximately 18 to 22, with the mean age skewed upwards due to the lack of any extremely young individuals to counterbalance the scattering of older members on the right numbers from areas of decreasing size. Eighty percent were single. When parents' occupations were rated on a scale of one to seven in the categories of professional, managerial, clerical, craftsman, semiskilled, service, and laborer, almost 25% of the males proved to be the children of professional men with decreasing numbers generally from the "lower class" occupations. More than one-third had attended college and more than 90% had completed at least a portion of high school. Eight, or approximately 3%, held graduate degrees. Approximately 80% were unemployed. Eighty-six percent were caucasian; only 2% were negro.

To thus categorize the marihuana user as the nice boy from the good home is of course hasty. All of these studies are subject to criticism on a number of obvious grounds. However, even making all possible allowances, two facts remain clear. First, regardless of the exact amount, marihuana use among even the very young exists and is increasing. And second, drugs such as marihuana and as we shall see, LSD, amphetamines and even heroin are available to all young people to a previously unimaginable degree, with increasing social acceptance of their use. Even those who do not use drugs will be faced with the decision, and they will need reasons to refrain, and legitimate reasons which they do not already know to be false.

The pharmacology of marihuana is interesting in and of itself, for only in the past several years has much of it become understood. The

active compounds in marihuana are contained in the resin of the flowering female of the species *Cannabis sativa*. All share similarities of central structure and are each essentially 21 carbon analogues of a compound synthesised by the ozonolysis of Olevitol (5-amyl resourcinol-Slide) and Menthane, to yield the basic 3-ring structure which they all share. An important aspect of the pharmacology is the importance of the R-radical to the potency of the compound, as measured by the somewhat dubious method of dog ataxia units. Potency increases with increasing chain length and with alpha and beta methyl substitution; thus the compound Dimethyl-Hexyl-Puran is 50 times as potent as the naturally occurring tetrahydro-Cannabinol. Thus far there have been seven successful syntheses described, the most recent and efficient by Mechoulam in Israel. All begin with Olevitol; then the first four build up the terpene ring by several successive low yield substitutions. The three most recent use presynthesised terpene and as such have higher yields. Finally, the various Cannabinolic acids also occur in nature in the resin, and likewise have a degree of activity, though less than the parent compounds.

The physiologic effects of marihuana are still almost totally undocumented or unknown, due largely to the rather surprising lack of research on the topic; a result of the reluctance of most institutions to engage in it. Physically, marihuana is known to produce a mild tachycardia, conjunctivitis, rhinitis, dryness of mouth, rather marked hunger, especially for sweets, and ataxia. In higher doses it produces stupor and sleep. Psychologically, it induces lethargy and mild euphoria; there may be disturbances in perception of time and space, increased receptivity if not sensitivity to tactile sensations, and a subjective increase in imagination and perception. These symptoms gradually fade after a period of two to three hours, leaving only a mild feeling of calm and passivity for perhaps several hours

more, though this last effect is probably due more to the attitude of the user than the drug. Until the 1930's, when the preparation finally came under the disparaging and baleful eye of Mr. Harry Anslinger of the Federal Narcotics Bureau, Cannabis enjoyed wide use by physicians and as the active ingredient in various over-the-counter patent medicines as a mood elevator, a sedative-hypnotic, a mild anesthetic and an analgesic preferred in many instances over morphine despite its lower power, because of its non-addictive character.

Before discussing the abuse potential of the drug, it might be appropriate at this point to define the difference between drug abuse and drug use. Drug use is obvious, — if you use a drug, you are a drug user. The lady who drinks champagne on her wedding day is a drug user; the man who smokes a cigar when his wife has a baby is a tobacco user. Likewise the high school student who tries a marihuana cigarette is a marihuana user. A habitual user is also reasonably obvious: one who uses a drug regularly, whether it be once a month or ten times a day. A drug abuser however, is one who uses a drug in such a way that it interferes with his personal, social, or professional functioning, regardless of how great or frequent that use might be. The handyman at my Grammar School who used to drink a pint of Four Roses before he went to clean the cesspool is not a drug abuser; the New York business man who similarly drinks a pint of Four Roses before meeting his client is a drug abuser. Second, the use or abuse of a drug is related to a considerable degree to the abuse potential of the drug itself. The smoker of four or five cigars a day may be rather impolite in elevators and somewhat impoverished, but he is not a drug abuser; the person who takes one trip on STP and is unfortunate enough to be one of those left with chronic personality disturbances as a result, is a drug abuser.

The possibilities for abuse with marihuana fall into two categories;

first, acute psychotic reactions, dangerous primarily because of the possibility of self-inflicted damage, and second, more subtle personality changes in the chronic user, including the use of other drugs. The acute psychotic reactions, if they exist at all, are certainly a rare phenomenon. The customary effect of marihuana is, of course, lethargy, euphoria, and sedentary behavior; however, due to the user's increased suggestibility and the impairment of normal defenses against anxiety, heightened activity in response to the environment may ensue, and in the appropriate circumstances panic reactions might conceivably occur. More reasonable, although equally undocumented, is the possibility of less dramatic but more prolonged behavior changes in the chronic user. Under this heading lies the so called "amotivational syndrome," which is described as a condition of apathy, decrease in productive activity, increased introspection and a general, if not marked withdrawal from the more external demands and concerns of social interaction. Corresponding to this, in the adolescent user, is the use of marihuana as an anxiety depressant to avoid the conflicts of young adulthood, and as a means of postponing their resolution until perhaps such behavior becomes habitual. Whether any of these phenomena actually exist, or the mechanisms to explain them, is still a matter of debate. Research so far has been sporadic and insufficient. Furthermore, considering the milieu of the drug user, the similarity of both these problems to chronic depression, as much a cause as a result of drug use, the unavailability of information about drug use habits in most segments of society, and the many other possible causes for such behavior that might be associated with a drug using society, it is difficult to imagine how the question of the existence of these prolonged or acute behavioral effects could easily be answered. However, difficulty of execution is no excuse for the lack of attempts, and until considerable further study has been done, the



The Haight-Ashbury symbol: a dove of peace superimposed upon a blue cross.

possibility of these effects cannot readily be written off.

However, with marihuana, another serious social question remains. The fact is that not only is the possession of marihuana against the law, it is a felony. Specifically, the possession of marihuana by a person of 18 years of age or more, in the state of California, is punishable by one to 10 years in prison for the first offence, with subsequent offences punished more severely, and California is by no means the most rigorous state in this regard. These rules become real when one realizes that last year, in the midst of riots, crime in the streets and a multitude of other major police problems, arrests for marihuana and dangerous drugs totalled 94% of the juvenile arrests in California, or 14,760 arrests in all, an increase of 176% over even the preceding year. Less than one percent of these involved "hard" narcotics such as heroin. Equally significantly, with the age of 18 years as the borderline between juvenile and adult courts, the adult drug arrests in California in 1967 totaled 42,032, of which marihuana

and dangerous drugs accounted for two thirds, a one year increase of over 87%. Finally it is worth noting that over two-thirds of those arrested were being arrested for their first offence.

Because of these facts, in considering the abuse potential of marihuana, two other factors must be cited. First, marihuana is illegal, and where one illegal drug can be bought, so may another. While a child may not buy heroin with his cigarettes, he can with his marihuana, and, thanks to the large network of illegal traffic in dangerous drugs of which marihuana is the most widespread, so may his non-smoking friend. While it is unlikely that either of them actually shall, as evidenced by the fact that with new marihuana users numbering in the millions, there were only six thousand new heroin addicts registered last year, the possibility of heroin, or more importantly perhaps, methedrine, remains available. Second, marihuana is illegal. Therefore for the time being, one must include in the abuse potential of the drug its most important if not its only abuse

potential, its ability to result in incarceration, loss of social status, educational and economic limitations, and permanent social handicap.

LSD

AND THE Psychedelics

LSD, with the possible exception of marihuana, is the drug about which least is known and more is claimed than almost any drug today. The most case hardened purveyor of snake oil and spirit ointment might balk before claiming, as does Dr. Timothy Leary, that his drug "... can put the subject in touch with other levels of energy changes," can aid in "confrontation with and participation in cellular flow; visions of microscopic processes; strange undulating multicolored tissue patterns; being a one celled organism floating down arterial waterways; being a part of the fantastic artistry of internal factories; recoiling with fear at the incessant push, struggle, drive of the biological machinery, clicking, clicking endlessly, endlessly, at every point engulfing you." On the other hand, the same drug is accused by equally lurid authors of causing insanity, suicide, murder, cancer, and (with full page newspaper ads taken to publicize the magazine in which the article appeared) deformed monsters.

The incidence of LSD use in adolescent society, other than that it does indeed exist, is almost impossible to determine. In the San Mateo survey, 8.4% of the boys and 4.3% of the girls had used the drug at least once. This represents a range from 9.7% of the senior boys to 2.4% of the freshman girls. Arrest figures are very unreliable because of problems both in reporting the arrests and in enforcing the law. LSD, because of its effectiveness in incredibly small amounts, can be carried in a multitude of virtually undetectable ways; absorbed on the pages of a book, dropped on the back of a stamp, or any of a number of similar forms. For this very rea-

son, the laws concerning LSD are much less severely enforced than those governing marihuana. With these limitations, it is surprising that in the first six months of 1967, a total of 350 juveniles and 692 adults were arrested for the possession, sale or use of LSD in California. Finally, as we have noted, LSD use in the Haight-Ashbury, a culture certainly not representative of the state of California or of any place for that matter, has an incidence of LSD use of almost 90%.

LSD was first synthesised from lysergic acid in the late 1930's by a Swiss chemist named Hoffman, whose inadvertent sampling of the drug in 1943 transformed what might have been another forgotten ergot derivative into the sensational drug it is today. LSD is found in trace amounts in two sources: the first is as a product of the mold *Claviceps Purpurea*, the ergot producing mold of rye bread, which caused the epidemic of ergotism in 944 A.D. that afflicted 40,000 people and has therefore been remembered ever since. (The 42,000 drug arrests in 1967 did not make it out of the financial section). The second source is the familiar morning glory seed, *Ipomoea*, fittingly subtitled for marketing "Heavenly Blue," or "Pearly Gates." This species is for some reason unavailable at most flowershops and has been so for two or three years.

D-lysergic acid diethylamide is one of a class of psychoactive compounds all of which share the structure of unsaturated indoles, or structures which, perhaps artifactually, can be bent to resemble them. Carbons #5 and #8 are asymmetric and as such there are four stereoisomers of which only LSD is psychoactive. Labeled LSD is not bound or destroyed in human blood; however 50% of its activity is lost from liver homogenates in a few minutes. Its half-life in the human blood stream, according to most authors, is 10 minutes by tracer, 35 minutes by assay. Finally, it concentrates in tissues in vivo in the following order: most in gut, then liver, kidney, adre-

nals, lung, spleen, heart, muscle, skin, and finally brain. Axelrod et al. calculated on the basis of isotopic studies that the concentration of the drug after a moderate dose was on the order of 0.0003 *micrograms* per gram of brain. It is a specific antagonist to serotonin; however, BOL, also a powerful serotonin antagonist, in vitro, has no hallucinogenic activity. Interestingly enough, however, Marchebanks, in 1966, isolated three components of homogenated and ultracentrifuged rat brain which bound serotonin. The first two behaved very much like albumin and MAO respectively. The third, and by far the strongest binder of serotonin of the three, found only in that fraction which contained nerve endings, was destroyed by neuraminidase (suggesting a ganglioside) and was specifically inhibited by LSD in concentrations of 10^{-6} Molar. The toxicology of LSD is still unclear. Thanks to a brilliant and daring experiment performed at the St. Louis Zoo, we now know that 300 milligrams of LSD, or approximately one thousand times the hallucinogenic dose in man, will cause an aged and somewhat senile elephant to die in convulsions. The LD50 in man has been calculated from toxic levels in rats to be around 14 milligrams, or approximately fifty times the hallucinogenic dose. However there is no known case of an LSD fatality in man due directly to toxic properties.

What does LSD do? Anyone who has read his *Time* magazine can come to some sort of an answer. However, for those who have not kept up in this important journal, Stefaniuk and Osmund administered some LSD to a group of 17 students back in the days when this was considered an acceptable pastime, and listed their responses: First, perceptual changes including visual changes, with changes in spatial perception, changes in form of faces or objects, color changes, outright hallucinations, changes in intensities of perception, perseverance of images and blurring of vision; auditory

changes, with increase or decrease in acuity, poor localization of sound, poor comprehension of words, auditory hallucinations, and interestingly enough, cross sensation (ie. "hearing" of objects, "seeing" of sounds); kinesthetic changes with body image changes, somatic changes, changes in temporal perceptions, both of duration and sequention. Changes in thought included changes in process, in content, and changes in associations, decreased ability to control thoughts (often a prominent symptom in LSD panic reactions) memory changes, delusions, and, with all of this confusion, a quite understandable decrease in performance on most tests of mental function. Mood changes include everything: euphoria, feelings of extreme exaltation, remorse, rage, terror and everything imaginable in between. Obviously nothing is really learned by making such a list; the attempt merely illustrates the difficulty of demonstration rather than any property of LSD.

The therapeutic uses of LSD are equally uncertain. Much was made of the drug in psychiatric circles during the fifties as a means of mimicking schizophrenia, and thus as a method of studying the disease. The Freudians found it a useful tool for promoting recall of childhood experiences and for catharsis; the Jungians found it a means to promote a meaningful transcendental experience. All in all several thousand papers on the uses of the drug have been published. Of the sample with which I am familiar none proves much more than the fact that LSD is a very powerfully psychoactive drug, which, like the elephant of the Kipling poem, is Very Like pretty much whatever the experimenter wished it to be Very Like. Without going into the papers themselves however, two areas of LSD use seem to me, if not proved to be worthwhile, at least worthy of further investigation. These are the work of McClean and others in the treatment of alcoholics, and the work of Kast and others in the use of LSD in the supportive care of the terminal

patient.

What is the abuse potential of LSD? This can be divided into three categories; acute psychotic reactions, prolonged mental changes, and physical damage. By physical damage one refers of course to the possibility proposed by Cohen et al. that LSD breaks chromosomes. Again there is not enough time to review all the evidence here. Suffice it to say that while this remains a definite possibility, the difficulty of other experimenters in duplicating Cohen's, and especially Irwin's results, and the proclivity of other drugs such as tranquilizers or even aspirin as well as many viral illnesses, to produce similar changes, all make the clinical significance of this finding somewhat dubious. Nonetheless, while the question remains unresolved, the possibility is enough to remain a reasonable contraindication to the use of this drug.

Unlike marihuana, acute psychotic reactions with LSD are probably not terribly uncommon, although again the true incidence is not known. Those severe enough to reach the attention of a physician generally take the form of an acute anxiety reaction, but occasionally include paranoid delusions with suicidal or homicidal behavior, although completion of such acts is quite rare, if only because of the difficulty of the LSD user in completing any involved series of actions. In order to treat these successfully, the physician involved must be able to bring to his therapy some understanding of the mechanism of the anxiety.

To understand if only intuitively what might be going on in the mind of the patient on LSD, recall the description of the effects of LSD on thought and perception just described: Looseness of associations, confusion of sensory input, delusions, inability to concentrate upon tasks, and inability to direct or restrain the stream of his thoughts, all of which, if only for the purpose of speculation, might be summarized as a decreased ability to inhibit, and therefore to order any part of higher

cortical functioning. The person on LSD is thus open, albeit in a rather higgledy-piggledy fashion, to numerous perceptions, associations and memories that normally are rather automatically edited out. Likewise his ability to perceive the disorder is impaired, so that subjectively his mind is "expanded," filled with new, and to his relatively uncritical consciousness, marvelous ideas. In fact however, his critical faculty, his normal defenses against anxiety, his normal suppression of conflicts, and his ability to rationalize his environment are all drastically impaired. Depending on the strength of the preparation, he is more or less at the mercy of his own randomized associations, and ideas. Tell a normal person that in the corner of the room there lurks a horrible toad and he will be unimpressed, for he has sufficient rational mechanisms both to refute the fact, and calm whatever irrational fears the thought might have aroused. Tell a person on LSD the same thing, and, depending on the dose and the individual, he has fewer mechanisms to reassure himself, an impaired ability to restrain the development and expression of his anxiety, and no way to think out the consequences of his actions. He is left merely with his own rather labile associations — that such a thing will kill him, that he must kill it — and whatever means he chooses to express them. Obviously this explanation is highly oversimplified and totally speculative. Indeed in most cases the object of anxiety is rarely this obvious or concrete. Nonetheless, both intuitively and practically this conception of the LSD experience provides a useful approach to therapy.

Diagnosis and treatment of the acute reactions varies with their severity; however there are several things that may be kept in mind. The best method of diagnosis is to ask the patient if he took LSD, for only with the most severe reactions is the patient so irrational that he does not know. Failing this, however, the diagnosis may be suspected by the history, from the background

of the patient or his demeanor, from the history of his associates, and by physical exam which usually reveals a tachycardia, dry mouth and dilated pupils. If STP is the drug involved one may find symptoms resembling atropine poisoning (due however to the peripherally sympathomimetic rather than parasympatholytic effects of the drug.). However, no finding and no sign is constant and all may be absent. Treatment is best performed with some understanding of the principles outlined above. One should not aim for rational interrogation or reassurance by explanation. The patient may have only a limited understanding of your words, but he will be very susceptible to more basic support; tone of voice, reassuring atmosphere, elimination of threatening symbols such as policemen, hypodermic syringes, or locked doors. The best kind of support is such as might be given to a child frightened of thunderstorms; winning the trust of the patient and then simply assuring him that he will be protected from danger and that there is nothing to fear, and dealing with his specific anxieties as simply as possible, is almost always sufficient if done with understanding. Thus patients often complain that they feel as if they were going to disintegrate, that their thoughts will explode, that if they relax for an instant their mind will destroy itself in a wave of disorder, that their brain is about to enter another dimension. Equally important, the physician's own fear of the LSD reaction as something dangerous which he does not understand, and his own doubts as to his ability to treat it, are rapidly transmitted to the patient and often serve to augment the difficulty.

If all else fails however, chlorpromazine 50 mg p.o. or 25 mg i.m. will generally terminate most reactions in a half hour or five to ten minutes respectively. This may be followed by another dose in four-six hours if necessary. With drugs such as STP where chlorpromazine has no effect, Librium 50 - 75 mg i.m. will remove much of the anxiety and

generally induce sleep without affecting the disorientation or other symptoms.

The question of long term psychiatric damage in a previous "normal" individual is as yet unclear, but must certainly be considered an important possibility. Effects that have been described include psychotic breaks, prolonged depressive symptoms, return or continuation of LSD effects after the acute phase, prolonged behavior changes, and psychiatric symptoms such as depersonalization, disorders of affect and association, and delusions for indefinite periods. The actual incidence of these complications is, again, not known. In 1960, Dr. Sidney Cohen of Los Angeles surveyed 5000 patients and experimental subjects treated with LSD including a combined total of 25,000 doses. In the group of experimental subjects there were no suicides or attempts and 0.8/1000 psychotic reactions lasting longer than 48 hours. In the group of psychiatric patients there were 1.2/1000 suicide attempts, and 0.4/1000 (one) successful suicides, with 1.8/1000 psychotic reactions of more than 48 hours duration. Dr. Cohen's figures are unfortunately

rendered somewhat dubious by the fact that of the 62 physicians to whom he sent questionnaires only 44 replied, and he had no way of verifying their responses. However, it remains the only truly substantial survey of any quality at all at the present time. However, some indication of the frequency of at least the acute reactions is found at the Haight-Ashbury Medical Clinic, where we see two or three acute drug reactions per day secondary to LSD or amphetamines. And, one memorable evening, on the day a new preparation of STP hit the street, the clinic treated 18 acute and severe cases of toxic psychosis secondary to the drug, including one suicidal patient.

INTRAVENOUS

AMPHETAMINES

Methedrine, according to the Physician's Desk Reference, is a "sympathomimetic, cerebral stimulant, anorexant, vasopressor, (and) decreases sense of fatigue . . . parenteral administration induces talkativeness in conscious patient . . ." Its

side effects include ". . . in large doses, restlessness and euphoria and insomnia in normal persons." Finally, under precautions, it admits that ". . . careful supervision is essential to avoid abuse. Prolonged use may be associated with psychic dependence in some individuals." The PDR might also have included the fact that persons using the drug orally in combination with prolonged lack of sleep have been known to demonstrate paranoid delusions, aberrant behavior, and frank visual hallucinations on as little as 5 - 20 mg. It might also have mentioned that, in contrast to the oral amphetamine use of the student or house officer, the pattern of drug use spreading into adolescent society is that of intravenous injection as well as oral use, with all its consequent disease potential. Finally, the PDR might have discussed the fact that despite the lack of "physiologic addiction" the intravenous amphetamine user, in contrast to the user of marijuana or psychedelics, will exhibit pronounced antisocial behavior in some instances, in order to fill his habit, will often behave in a violent and threatening manner while in the midst of a period of use, and may persist in the use of the drug for years, responding poorly if at all to treatment for what in everything but name behaves like an addiction.

Epidemiologic data on the incidence of methedrine use are virtually nonexistent, and my own information is taken largely from the previously mentioned Drug Practices Survey, and my own experience at the Haight-Ashbury Medical Clinic. According to the survey, performed in the latter part of 1967, 44.1% of the inhabitants have used oral amphetamine, 26.4% use the drug by injection either subcutaneously or intravenously. However, the alarming feature of the drug is not its incidence in so heavily drug oriented a society as the Haight, but its increase. In 1967, intravenous amphetamines were a peculiarity. By 1968 they were a recognised and growing pattern of behavior that provoked

Dr. Seward and his assistants discuss clinic problems.



strong disapproval even among the Haight-Ashbury residents; the number of buttons on what passes for lapels that read "Speed Kills" did not refer to the traffic problem. Now, methedrine is probably second only to marihuana and tobacco as the most commonly used drug in Haight-Ashbury.

The reasons for this increase are unclear; much of it is probably due to the changing population. The older "hippie" of a year or two ago, should he indeed have ever existed at all, has long since fled the publicity of centers like the Haight and has been replaced to a large extent by something closer to the runaway, the high school dropout who flees from the conflicts of adolescence to the fabled Haight-Ashbury that *Life* magazine has told him so much about. Here, however, instead of kindly gurus handing flowers to the cops and doing naked yoga in the park, who, however at variance with "straight" society, at least had some pretense of ethic and structure to his culture, he finds only other confused adolescents with nothing to replace the structure of the existence they have fled. They lack goals, clear ideals, coherent motivations or durable social structure, and they find little in the bleak and lonely transience of Haight street to replace what they left at home. To these children, the excitement, the sense of power, of brilliance, of purpose, of omnipotence lent by amphetamines must form a powerful lure.

The pharmacology of methedrine, the most commonly used drug, is fairly straightforward. It is an indirect sympathomimetic similar to amphetamine and ephedrine, with increased central stimulatory powers, and decreased peripheral manifestations. It has no consistent effect on the heart rate, but in small doses does increase the force of contraction. Cardiac output is often increased secondary to the increased venous return caused by constriction of the venous reservoir. It causes no change in coronary blood flow.

Of all the previously mentioned drugs, the diagnosis of methedrine

abuse is probably the easiest, and its treatment the most unsatisfactory. The average amphetamine user seen at the Clinic is young, as likely to be a girl as a boy, and coming for the treatment of one of three complaints. He may be one of the two to five new cases of hepatitis seen each day (although much of this may be infectious as well as a serum hepatitis); he may be in for treatment of cellulitis or abscesses secondary to the use of contaminated needles; or he may be there for the treatment of acute or prolonged psychiatric disturbances. This customarily occurs at the end of a prolonged streak of methedrine use, wherein the user, having run through the effects of his initial dose, having begun to feel the onset of the severe depression, exhaustion and continuing paranoid ideation of methedrine withdrawal, seeks to postpone the inevitable by injecting still larger doses of the drug. He may continue in this manner for days, injecting as much as an ounce a day with increasingly severe mental disturbances. Usually he will present in a state of marked agitation, continually making small unrelated movements with his hands and arms, smoking incessantly, highly suspicious of those around him, unable to stand still, and most characteristically talking continually, either to himself, or to the people around him. His monologue although occasionally related to the conversation around him is generally merely a stream of consciousness, revealing within it many anxieties and hostile and aggressive fantasies. On physical exam, the most striking feature may be emaciation, with as much as a 30 to 40 pound weight loss in a matter of months not uncommon. Pupils may be dilated and there may be some systolic hypertension without tachycardia. Not infrequently patients may complain of dyspnea, chest pain, severe abdominal pain, or other bizarre somatic symptoms. The most consistent clue is the presence of "tracks" or puncture marks on the forearms, hands, legs and even occasionally in the region of the neck veins. Most impor-

tant however is the fact that any or all of these findings may be minimal or absent, and while common, especially the puncture marks, none is invariable.

Treatment of the methedrine abuser is both uncertain and unsatisfactory. Tranquilizers and sedatives are not terribly effective in relieving the acute symptoms and should in any case be used sparingly, for when the dose finally wears off, and anywhere from two to five days worth of fatigue, anorexia and emotional disturbance catch up with him the resulting "crash" is likely to be monumental enough without the additional effect of sedation. The most important part of the treatment is reassurance, explanation, rest, and important, withdrawal from the drug, though none of these are easy or especially satisfactory. Treatment for the chronic problem is even more difficult, for as previously mentioned, methedrine users behave towards their drug very much in the manner of addicts. Unlike the user of marihuana, LSD or other psychedelics, a large number of methedrine users will not refer to methedrine as their drug of choice. In the Drug Practices Survey, many of them claimed that the drug that best satisfied their expectations of the drug experience was LSD, yet they continue to be chronic methedrine users. Again in the manner of heroin addicts, they themselves are the most severe depreciators of the drug and the saying on the street that if you want to know how bad a drug "Speed" is, just ask a "Speed Freak," is certainly a true one. Nonetheless they rarely seem to ask for help with their habit, and treatment when offered, at such institutions as Synanon or the State Hospital in Mendocino, is rarely successful.

A final example of the bleakness of the problem was a patient of mine, a nineteen-year-old boy, who had begun to use intravenous methedrine four years before, who three years previously had acquired osteomyelitis of his frontal bone secondary to seeding from a infected punc-

ture site. This had come to surgery requiring the excision of his frontal bone and left eye. He continued to use drugs with continuing infections and three months previously his plate had been removed and he had again been placed on high doses of antibiotics for recurrence of his osteomyelitis. When I saw him, he was thirty pounds underweight wearing only a cloth cap and a leather eyepatch to cover his skin flap, and still only slightly interested in receiving help for his drug problem, — and his chief complaint was multiple abscesses and pustules on both arms and hands secondary to infected puncture wounds.

To conclude so prolonged a discussion, two things are evident. First, in the last few years there has been an alarming increase in the incidence of drug use and abuse by adolescents, indeed a symptom of other problems in American society, but in turn a problem in itself. Second, we are faced with the fact that other than the existence of the problem as a problem we know almost nothing about it. With this appalling lack of information, we are in turn faced with the question of what to do about it.

The common reaction of this country, when faced with situations it doesn't like, is to pass a law about it. In many instances this is effective and worthwhile, and the effectiveness of the State of Connecticut in reducing traffic mortality by enforcing its traffic laws is a good example. Here too, our answer has been to pass laws, but here that response has been not merely ineffective, but detrimental. That it is ineffective is evidenced not merely by the rapid increase in the use of drugs, but by the still more amazing increase in their availability. If students in junior high school can be presented the opportunity to use drugs with little risk of discovery at the ages of thirteen and fourteen, then even if none of them actually do so, the law has been ineffective. That the laws as they are presently written and enforced are detrimental is evidenced by many factors. First, by making

the use of drugs a severely punished crime, we have put them beyond the range of supervision, beyond the area of study, and beyond the range of rational discussion. Second, by making them illegal, we place their distribution in the hands of criminals who manufacture drugs of poor or dangerous quality and unknown composition, and distribute them to their markets in a Madison Avenue fashion without regard to their relative dangers or the problems of the population they might reach. Third, to justify the severity of our laws, specifically the laws regarding marihuana, we have created a horrifying mythology about the dangers of the drug that adolescents know to be false, thus making more reasonable warnings about more dangerous drugs untrustworthy. Finally, and most important, they have aided in the creation of a situation in which a widely accepted social practice, involving in action or assent most of urban middle class young people today, the smoking of marihuana, is a serious crime. This in turn has led to three new problems. First it has created thousands upon thousands of felons, convicts at worst, and at best, individuals permanently impaired in social, educational, and professional participation in society, out of people who in all other respects may be totally normal and useful citizens. Second, it has contributed to the creation among the majority of users who do not get caught, a little more sense that the violation of the law for merely personal enjoyment is permissible and acceptable behavior. Third, because of the inequities in the laws and the inequalities in their enforcement, the marihuana laws have helped to produce a disrespect for the law in general among user and non-user alike.

I do not mean by this to advocate either the condonement of illegal activities or the unrestricted distribution of dangerous drugs; other than in the case of marihuana, I am not at the moment even a particular advocate of major changes in the statutes themselves. What I do advocate is that the problem be seen for

what it is, a social problem, and a medical problem, requiring research, understanding, and where necessary, treatment. It is a social problem in the sense that it is a complex and poorly understood reflection of the equally bewildering and widely felt disparity of values in modern American society, which is as much a cause and effect of rioting, poverty, the Vietnam war, and draft resistance as it is related to the smoking of marihuana and the abuse of dangerous drugs. In this manifestation however, it is a medical problem whose investigation and treatment is the responsibility of the medical profession. The function of the law, as in the rules governing other potentially hazardous activities, should be adjusted to the danger of the drug, and for those drugs which indeed are dangerous, should be designed to promote the medical treatment, rather than the legal punishment of the individuals involved.

Finally, it must be added that the reason for the present state of affairs lies not solely in the usurpation of the law, which has merely used traditional channels to fill a vacuum left by the abdication of other agencies. The other half of the reason is the lack of enthusiasm on the part of the medical profession to become involved, either from indifference, or from fear. However, with each passing day, the fear of seeming to be involved with a controversial topic should be counterbalanced by the severity of the problem itself. If members of the medical profession, both as parents and as physicians, and perhaps most important, as members of society, do not wish to see the drug habits of the Haight-Ashbury become the drug habits of Newton High School, then the time to begin dealing with the problem is today. One can only hope that it was not yesterday.

Dr. Seward, a first year resident in pediatrics at H. C. Moffitt-University of California Hospitals, spent his HMS elective period in the Haight-Ashbury clinic.

THE WILLIAM O. MOSELEY, JR.

TRAVELLING FELLOWSHIPS

THE BEQUEST OF JULIA M. MOSELEY MAKES AVAILABLE FELLOWSHIP FUNDS FOR GRADUATES
OF THE HARVARD MEDICAL SCHOOL FOR POSTDOCTORAL STUDY IN EUROPE.

The Committee on Fellowships in the Medical School has voted that the amounts awarded for stipend and travelling expenses will be determined by the specific needs of the individual.

In considering candidates for the Moseley Travelling Fellowships, the Committee will give preference to those Harvard Medical School graduates who have—

1. **Already demonstrated their ability to make original contributions to knowledge.**
2. **Planned a program of study which in the Committee's opinion will contribute significantly to their development as teachers and scholars.**
3. **Clearly plan to devote themselves to careers in academic medicine and the medical sciences.**

Individuals who have already attained Faculty rank at Harvard or elsewhere will not ordinarily be considered eligible for these awards.

There is no specific due date for the receipt of applications or for the beginning date of Awards except that the Committee requests that applications not be submitted more than 18 months in advance of the requested beginning date. The Committee will meet once a year in January to review all applications on file. Applicants will be notified of the decision of the Committee by January 31. The Committee may request candidates to present themselves for personal interviews.

Application forms may be obtained from, and completed applications should be returned to:

SECRETARY, COMMITTEE ON FELLOWSHIPS IN THE MEDICAL SCHOOL
HARVARD MEDICAL SCHOOL
25 SHATTUCK STREET, BOSTON, MASSACHUSETTS 02115

GEORGE CHEEVER SHATTUCK

NESTOR of TROPICAL MEDICINE

JEAN A. CURRAN '21

On his 90th birthday, there is general agreement that George Cheever Shattuck is the greatest living figure in tropical medicine in the United States as well as in the world at large. For on October 12, 1969 Dr. Shattuck had lived through ninety years during which medicine had experienced the most momentous progressive developments of its history. Ardently supported by his equally distinguished father, Frederick Cheever Shattuck, Harvard's Jackson Professor of Clinical Medicine, and in association with Richard Pearson Strong, professor of tropical medicine at Harvard Medical School, George Cheever Shattuck, as clinical professor, played a major part in establishing tropical medicine as an academic and clinical discipline in the United States.

George Shattuck represents the tenth generation descended from William Shattuck who landed in Boston in 1642, and the fifth in a line of distinguished physicians, the first being Benjamin Shattuck of Templeton, Massachusetts and the second, George's grandfather, George Cheyne Shattuck, who pioneered, among other things, in the use of the clinical thermometer at the Massachusetts General Hospital.

The tradition for achievement among the first families in Boston, so deeply instilled into George Shattuck from childhood, was fostered through the conventional route of the Browne and Nichols School, Harvard College, and Harvard Med-

ical School where he was graduated in 1905.

During his medical student days, Dr. William Osler occasionally visited the Shattuck home. One day he said to George, "It is a great pity you were named George Cheever, instead of George Cheyne, after your grandfather and greatgrandfather." He added, "When you write your first paper for publication, you should sign it George Cheyne Shattuck and you will make a great impression!" Accepting this as an amusing idea, he did sign his first publication in Manila that way. "When I next saw Dr. Osler," George recalls, "he laughed his head off. He thought he had pulled my leg for fair."

After a year as house pupil at the Massachusetts General Hospital, a new variation in the Shattuck genes led George into a career of adventure in research, and explorer of tropical lands over seas.

His first inspiration came during boyhood when he witnessed a ship being loaded in Seattle by a line of Chinese coolies with long "pigtails" and blue shirts. He said to himself, "I want to go see where those people came from." In 1906, on a trip around the world, he saw his first cases of smallpox and beriberi in Canton, and leprosy in the Philippines.

With an introduction from his father, George called upon Richard P. Strong, Director of the Bureau of Science Laboratory at Manila. On being told he intended to stay only

three days, Strong asked, "What's your hurry?" On being shown the finest equipped laboratory he had ever seen, George decided to remain, and carried out a study of chronic ulcers of the skin and underlying tissues to determine whether they were due to syphilis or yaws.

Victor Heiser, who was also on the scene, took him on a tour of Samar, Leyte, and Mindoro to identify leprosy cases for hospitalization by field laboratory tests.

From that time forward, George's career was to be inescapably linked with tropical disease and tropical climes.

After a year of graduate work in Vienna during which he saw syphilis of the heart diagnosed for the first time, Dr. Shattuck was able to identify a syphilitic heart at the Massachusetts General in 1909 for James Homer Wright, who then cut sections and demonstrated spirochetes. While working in Wright's laboratory in 1915, Dr. Strong invited Shattuck to join a Red Cross expedition to Serbia to deal with a typhus epidemic. Two-thirds of the Serbian physicians dealing with the outbreak had already died, but Shattuck accepted without hesitation. Hans Zinsser and A. W. Sellards also joined the party to engage in investigations of the etiological factors involved, while Strong organized an effective delousing program. All four men were destined to be future coworkers at both Harvard Medical School and Harvard School of Public Health.

After Serbia, Shattuck served with the Expeditionary Force in France until 1918, following which he was Secretary of the Medical Division of the League of Red Cross Societies in Geneva, where Strong was the director. From there it was quite natural for him to accept an offer to join the Department of Tropical Medicine at the Harvard School of Public Health, with the rank of assistant professor of tropical medicine at the Medical School as well. When he modestly disclaimed any expertise in tropical diseases, Strong promised, "I'll give

you a chance to learn in the field.”

Richard Strong kept his promise in full, for Shattuck was asked to join the Hamilton Rice Seventh Expedition to the Amazon in 1924-25 to study tropical diseases in the Amazon River basin. After Strong returned to Boston, Shattuck remained for a year with Dr. and Mrs. Rice and undertook an extremely hazardous exploration from the mouth of the Negro, up that river to its confluence with the Branco, which took them through dense jungles to the southern border of Venezuela. In some villages, the natives had been nearly exterminated by Leishmaniasis, malaria, and trypanomiasis.

Although Shattuck was not an athlete and found the tropics caused marked debility and loss of weight, his fascination with research and his hardihood carried him through this exhausting experience. When he recovered, he joined Strong on the Harvard African Expedition of 1926-27; first to make biological and medical surveys in the interior of Liberia, and then by boat, rail and trail up the Congo River via Stanleyville and Leopoldville to Lake Tanganyika. Detailed studies were made and published of the terrain, population, climate, flora, fauna, and diseases of each area.

Shattuck led two expeditions of his own in 1929-30 to Yucatan and Guatemala under the joint auspices of Harvard and the Carnegie Institute of Washington for a prevalence of disease study and a general classification of health problems. This was followed by research on onchocerciasis, a filaria worm infection in Guatemala in 1931-32.

Meanwhile, on the home front, Shattuck had organized a teaching and research service at the Boston City Hospital as early as 1921. There in 1923 he discovered a number of unrecognized cases of pellagra on the wards, and the first indigenous case of granuloma inguinale. That same year six Chinese referred from the quarantine station with a diagnosis of hookworm were found to be infected with the liver fluke, *Clonorchis sinensis*, which proved to

be quite readily curable. Scurvy, caused by faulty concepts of feeding in children, had been frequently observed in those years, but had been overlooked among adults until a series of such cases were observed by Shattuck in the hospital in 1928. Undoubtedly his most significant contribution was the demonstration that so-called “alcoholic neuritis” was in fact a vitamin deficiency disease identical with tropical beriberi. When these patients were persuaded to eat a full, well rounded diet, even if they continued to drink, their neuritis cleared up!

Another advance, first proposed by Shattuck to William B. Castle in 1928 was the suggestion that tropical sprue was due to dietary deficiency, and could be cured by liver extract. This was subsequently proved to be correct.

On July 9, 1932 Shattuck was married to Virginia Grigsby Chandler Peabody, widow of Francis Weld Peabody.

From 1939 to his retirement as emeritus professor, Dr. Shattuck was clinical professor of tropical medicine and continued thereafter to work in his office in Building E until it was transferred this year to the new quarters provided for the Department of Tropical Public Health in the School of Public Health at 665 Huntington Avenue.

Dr. Shattuck's other contributions over the years include: attending tropical medical consultant to the Marine Hospital in Brighton, the Massachusetts General and Peter Bent Brigham hospitals, to the Secretary of War from 1941 to 1944, as president of the Boston Health League and the Massachusetts Center Health Council over the decade 1938-49, and of the Health Council of United Community Services of Boston in 1950.

Honors include the Serbian Order of St. Sava, III class, 1918; the Distinguished Service Order from Great Britain, 1919; the Theobald Smith Medal of the American Academy of Tropical Medicine, 1954; the Orden Nacional de Merito Comendador, Carlos Findlay, Cuba, 1950; Orden

Nacionaldo Cruzeiro do Sul Official, Brazil, 1958; the Richard Pearson Strong Medal of the American Foundation of Tropical Medicine, and the Bronze Medal of the New England Wild Flower Society, 1965.

He has membership in: the Massachusetts Medical Society, American Public Health Association, American Association for the Advancement of Science, American Academy of Tropical Medicine (pres. 1947-48), American Society of Tropical Medicine, Royal Society of Tropical Medicine and Hygiene, Pan American Public Health Society, Sigma Xi, and the American Academy of Arts and Sciences.

Books of which he is author are: *Principles of Medical Treatment*, 6th revised edition, 1926; *The Peninsula of Yucatan*, 1933; *Medical Survey of the Republic of Guatemala*, 1938; *Handbook of Health for Overseas Service* (with William Jason Mixter), 2nd revised edition, 1943; *Diseases of the Tropics*, 1950; and *A Memoir of Frederick Cheever Shattuck*, 1967.

Dr. Shattuck in his ninety years has indeed lived through and made vital contributions to the great period of modern medicine and public health, ushered in by the discoveries of Pasteur and Koch shortly before his birth, and introduced to the Harvard Medical School by Harold C. Ernst in 1885, together with the other great discoveries to follow, especially among tropical diseases. He can now understandably rest on his laurels, but he continues to work at his office at the School of Public Health. He and Mrs. Shattuck keep in active contact with world events and extend gracious hospitality to their many friends on their beautiful estate at 450 Warren Street, Brookline.

Over the past 25 years, I have enjoyed the rare privilege of Dr. Shattuck's friendship, beginning with his invaluable aid in organizing an expedition to Liberia during World War II for Harvey Firestone, to study the epidemiology of African Sleeping Sickness and devise measures for its control.

"TRAGIC EMPIRES"

People, like the red blood cells that sustain them, tend to agglutinate. The idea of safety in numbers has always persisted, and the development of cities, as Chairman John W. Gardner of the Urban Coalition suggests in his paper published elsewhere in this issue of the *Bulletin*, originally stood for increased physical safety to their inhabitants, as well as bringing to a convenient central market place the products of agriculture and man's craftsmanship, and all the cooperative achievements in communication, and in getting and spending that contributed to his welfare.

The city, however, has had centripetal as well as centrifugal forces working within it. As the result of a natural but unplanned influx from the surrounding rural districts, the city has grown and with its growth the complications of urban life have increased. The poor and the untrained of the countryside have gravitated to it, seeking to escape their poverty and the frustrations that the lack of training and of opportunity have engendered. Its ghettos, unfit for decent living, have sprung up in it as it grew, unplanned; its atmosphere has become polluted and an environment, culturally as well as physically unacceptable has resulted.

A great city, as a former editor of the *British Medical Journal* described it, is like a huge cancerous growth, the center of which has gradually become necrotic, strangled by its increasingly impervious periphery.

Great cities, it is true, have survived their lack of planning and the various tribulations to which they have been subject, because they have had reasons for persisting — Jerusalem, London, Paris, Rome. Far more of the ancient urban centers have disappeared: Ur of the

Chaldees, the home of Abraham; Troy, victim of the hollow horse; Carthage, once a Mediterranean port of nearly a million inhabitants that survives only as some scattered hamlets. Their pomp of yesterday is one with Ninevah and Tyre.

Our present urban problems, according to Mr. Gardner, result from a lack of intelligent communication between a variety of persons and interests and political commissions and bureaus in planning and directing the growth of regions that encompass one or more cities, even as each city has failed to direct and perhaps even limit its growth by any coordinated planning. The present belated concentration on urban renewal, laudable as it may be, must give way to a comprehensive regional planning if the problems of air and water pollution, of transportation and of lack of open spaces are to be solved. There is still substance in Thoreau's belief that "in wildness is the preservation of the world."

But the most serious basic problem, out of which spring all the incidental ones, is that "our greatest cities have lost command of themselves and of their future." If this control is to be regained it will come through a coordinated effort by the various community functions that must learn to work together.

This the Urban Coalition is striving to promote, despite the lateness of the hour, for the Coalition was not formed until after the summer riots of 1967. Nevertheless, many of the 45 local coalitions are apparently doing very well; others are less successful but all are striving.

Governor John A. Love of Colorado in the *National Geographic* for August described his state's plan to prevent the eastern side of the Rockies from becoming another urban sprawl, by developing cluster cities, well separated with good

transportation facilities and with many open spaces. In the Southern Hemisphere Caracas, Bolivia, has been cited for its intelligent and far-sighted city planning. The awakening has come and it need not be too late.

A passage from Clifford Bax's hymn, written after the close of World War I may not be totally irrelevant:

Age after age their tragic empires
rise,
Built while they dream, and in
that dreaming weep:
Would man but wake from out his
haunted sleep,
Earth might be fair, and all men
glad and wise.

ADVERTISING IN THE BULLETIN

The officers and Council of the Harvard Medical Alumni Association, representing the *Bulletin's* publishers — the Association itself — have voted unanimously to engage in a new venture in respect to advertising in the *Bulletin's* pages. They have accordingly accepted the proposal of MediaRep Center, Inc., to act as the *Bulletin's* sole representative in the solicitation of advertising.

MediaRep Center, a young and promising corporation, specializes in the formation and servicing of groups of publications of the same type and with the same general interest, like the Cambridge Alumni Group, consisting of *Harvard Alumni Bulletin*, *Harvard Business School Bulletin*, and *Technology Review* of M.I.T. They already have as a client Boston University Medical Center's *Scope* and hope that with our own *Bulletin* they will have the nucleus of a group of academic medical publications. All advertising will, of course, be subject to the approval of the publishers.

Since advertising contracts are customarily based on single insertions, or on even numbers of them, the *Bulletin* will now go on a bi-monthly publication schedule, six is-

sues a year, with a slight change in its physical dimensions to accommodate itself to standard requirements.

The *Bulletin* has never before made any serious effort toward self-support and, since it is distributed without cost to its subscribers, it has had to rely for its subsistence on the feedback from the fund that the Association collects for the Medical School. For the Fund year 1968-1969 these contributions amounted to \$269,683.05 from 62

percent of the 6305 alumni, and from honorary alumni and friends. In addition 257 alumni contributed \$74,996.74 for specific purposes and 716 paid \$102,810.81 on their Program for Harvard Medicine commitments, bringing the grand total to \$443,205.60.

If this arrangement succeeds as well as it has for other of Media-Rep's clients, a still larger proportion of the Alumni Fund will be available for student scholarships.

ALONG THE PERIMETER

PROFESSOR of ANESTHESIA

A clinician-scientist-teacher in anesthesia, Richard J. Kitz, M.D., has been appointed professor of anesthesia at HMS. Simultaneously he has become chief of anesthesia and head of the School's department of anesthesia at Massachusetts General Hospital.

At MGH, he succeeds Henry K. Beecher '32, Henry Isaiah Dorr Professor of Research and Teaching in Anesthesia, who will be on a year's leave of absence from his hospital post. Dr. Beecher will retire in 1970.

Dr. Kitz comes to Harvard from Columbia University College of Physicians and Surgeons where he was associate professor of anesthesiology. He was also associate attending anesthesiologist at Presbyterian Hospital.

PROFESSOR of UROLOGY

George R. Prout, M.D., a urologist whose major concern is the study and treatment of malignant tumors of the urinary tract, has been appointed professor of surgery at HMS and chief of the urology service at Massachusetts General Hospital.

At the MGH, Dr. Prout succeeds Dr. Wyland F. Leadbetter, clinical professor of surgery, at HMS who has asked to be relieved of his hospital administrative responsibilities.

He received the M.D. degree from Marquette School of Medicine in 1954. In 1961 he was an NIH special research fellow in the department of biochemistry at Columbia; in 1968 he studied the techniques of gas chromatography and mass spectrometry with Professor Bo Holmstedt at the Karolinska Institute.

Dr. Kitz is chairman of the Committee on Pharmacology and Neuromuscular Transmission, Scientific Council, American Society of Anesthesiologists. In 1962 he received first prize for his original research work at the New York State Society of Anesthesiologists Residents' Session. He is a diplomate of the American Board of Anesthesiology and a fellow of the American College of Anesthesiology.

Dr. Leadbetter will continue in his University post.

Dr. Prout was formerly professor and chairman of the department of urology at the Medical College of Virginia where he provided the urologic component in one of the nation's best known kidney transplantation centers. He is highly regarded as a clinical teacher both by undergraduate medical students and by residents. In addition to his research in cancer of the urinary tract,

Dr. Prout and his associates have made intensive studies of the protein morphology of the prostate, seeking to develop therapeutic means to prevent recurrence of metastases in patients with prostatic carcinoma.

Dr. Prout received the M.D. degree in 1947 from Albany Medical College. He is chairman of the co-operating group of urologists in other medical centers who are studying the effects of chemotherapy and irradiation on cancers involving genito-urinary organs. This work is supported by the National Cancer Institute. Dr. Prout is a member of the Commission on Cancer of the American College of Surgeons and was certified by the American Board of Urology in 1959.

DEAN IS TRUSTEE

Dean Robert H. Ebert, M.D., has been elected to a five-year term on the Board of Trustees of Meharry Medical College, Nashville, Tenn.

The announcement was made by Victor S. Johnson Jr., the chairman of Meharry Medical College's Board of Trustees. Mr. Johnson pointed to Dean Ebert's leadership in HMS curriculum revision and involvement in community health.

Commenting on his election, Dean Ebert said, "I am deeply honored to have been elected a member of the Board of Trustees of Meharry Medical College at a time when it is involved in a major effort to strengthen its financial base so that it may significantly expand its already splendid contributions to the medical profession. One of the most immediate answers to the problems incurred by the shortage of medical manpower in the United States is to strengthen and expand wherever possible our existing medical schools."

Erratum: The *Bulletin* apologizes for the error in the summer issue that listed the associate clinical professors as assistant clinical professors and vice versa.

INNOVATIVE PROGRAM AT HSDM

An innovative dental assistants' training program formed jointly by the Training Center for Comprehensive Care and the Harvard School of Dental Medicine graduated its first class of six women on March 13, 1969. "The overall purpose of the Training Center program," as stated by its director, Mrs. Suzanne Greenberg, "is to train persons who, because of a variety of reasons, among them economic, may not have had an opportunity to develop their potential to the fullest." Funds for this program were made available through the U.S. Department of Labor and the Office of Economic Opportunity.

The department of ecological dentistry at HSDM with James M. Dunning, D.D.S., as chairman, organized the women's professional training. Myron Allukian, D.D.S., M.P.H., a postdoctoral research fellow in ecological dentistry, directed the group's dental education with the assistance of Miss Edna Bradbury, D.H., and Miss Helen Ahern, C.D.A., in the clinical training phase.

In the words of Dr. Allukian, the goal of the program is "to provide the trainee with the basic knowledge, skills, and direct clinical experience so that she may function effectively as a modern dental assistant." Specifically, the program is designed to:

1. Provide a working knowledge of the theory underlying dental treatment so that the trainee can understand its significance and relationship to dental health.
2. Furnish the trainee with knowledge and experience in those laboratory, clinical, and office procedures that are the accepted responsibility of the dental assistant.
3. Instill a sense of professional ethics and responsibility so that the trainee can take her rightful place as a member of the dental health team.

4. Provide the community with a resource person who can act as a catalyst for better dental health.

The desire to work in dentistry was the basic criterion for the selection of the six female participants. These women normally would not have been accepted into the traditional dental assistant programs because of their educational background, socio-economic status, age, and family responsibilities. Five of the women were from urban Boston and the sixth was from a suburb. The women ranged from a recent high school graduate to a grandmother. Of the six, two were not high school graduates. The women had been out of school for an average of seventeen years. Five of the trainees had families with a total of sixteen children and three were the heads of households.

The 27-week program, which operated five days per week from 8:30 a.m. to 5:00 p.m., included morning and afternoon lecture-discussion

sessions on dental health sciences and the various techniques of dental assisting. Twenty-four hours per week were spent assisting dental students with patients in the HSDM clinic. Trainees had rotating outside assignments in private offices, nursing homes, and the dental clinics of the Industrial School for Crippled Children and the Roxbury Boys Club.

Dr. Allukian discussed five factors that he considered to be critical to the program's success. These included an early introduction to clinical work, a flexible academic schedule, development of appropriate teaching methods, the social services rendered by the TCCC, and the attitude of other members of the dental team.

First, the HSDM-TCCC trainees went into clinic in the second week and their lectures coincided with the dental student's clinical work at any given time. This simultaneous presentation of theory and practice was beneficial to the trainee's comprehension of the work she was doing. Traditional dental assistant programs are nine or ten months long and require students to attend several months of lectures before being

Seated l. to r: Vivian Taylor, Director Dr. Myron Allukian, Mary Diggs. Standing l. to r: Supervisor Helen Ahern, C.D.A., Lydia Shoreman, Ruth Alexander, Annie Mikell, Co-director, Edna Bradbury, R.D.H.



introduced to clinical work.

Second, the program was attuned to the needs of the group. If they had difficulty with certain concepts, more time would be spent on that material. The trainee group of six was small enough to permit this flexibility and yet was sufficiently large to justify the input of time, money, and professional effort.

Third, teaching methods had to be tailored to a group that had varying educational backgrounds, had been away from studying for long stretches of time, and had to devote much time to family responsibilities. The teaching staff developed outlines and illustrations that aided note taking and gave the trainees an easily accessible and intelligible information source. In addition, the teaching staff sought ways to dramatize the material to make it easier for the women to digest. Discussion groups that followed lectures made it possible for the women to help each other by explaining the subject matter in their own terms.

Fourth, the TCCC provided the women with social services that permitted them to fulfill their responsibilities while continuing with their education. TCCC services included a social worker, medical counsel, a stipend, and remedial aid.

Fifth, the dental students participated in the program and became well acquainted with the trainees. They were able to answer many questions for them and help foster professional attitudes. The staff was pleased with the mutual interest and concern that existed between dental assistant trainees and dental students. The clinical staff and the dental students found that the older women were also able to deal more effectively with patients than were recent high school graduates. Thus the success of the program may be largely attributed to a constant awareness of the progress and well-being of the trainees coupled with a willingness to adjust the program to suit the group's needs.

The six women who successfully completed the dental assistant's training program received certifi-

cates from the TCCC, Massachusetts Department of Public Health. In March, four of the six had been placed in positions as dental assistants. One woman is working at Harvard, two are in private offices, and one is at the Roxbury Boys Club.

Moseley Fellowships Awarded

Two recent graduates have been awarded William O. Moseley, Jr. Travelling Fellowships for postdoctoral study in Europe. The Fellowship is awarded to those who have already demonstrated their ability to make original contributions to knowledge; planned a program of study which will contribute to their development as teachers and scholars; and clearly plan to devote themselves to careers in academic medicine and the medical sciences.

Ira B. Black '65 will spend a year in the laboratory of Dr. Leslie L. Iversen at Cambridge University where he will pursue his research on the regulation of extraneuronal enzyme activity by neuromediators. After graduation, Dr. Black in-

Although starting salaries are a problem for the women who have to support families, they now have a greater income potential, and share in the pride and prestige that comes from being a part of the dental health team.

turned in medicine at North Carolina Memorial Hospital and then took a residency at Boston City Hospital, II and IV (Harvard) Medical Services. Since 1967 he has been a research associate in the Laboratory of Clinical Science, National Institute of Mental Health.

Joseph F. Mushinski '63 will study comparative amino acid sequences of mouse IgA myeloma proteins under Professor Gunter von Ehrenstein at the Max-Planck-Institut für Experimentelle Medizin. Dr. Mushinski was an intern (1963-64) and a fellow (1964-65) at Duke University Medical Center. Since 1965 he has been a research associate in the Laboratory of Biology, National Cancer Institute.

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